HOSPITAL SAFETY COURSE
20-22 Jun 2006

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- **Day 1 -**
  - **Administrative**
  - **Overview**
  - **Certifications**
  - **DA programs and the MTFs**
  - **JCAHO**
- **Day 2 -**
  - **JCAHO environment of care**
  - **Seven elements of the EC std**
  - **Management plans**
    - **The hospital**
    - **Standards, intent, PIM**
- **Day 3 -**
  - **Healthcare Hazard**

References

- **Healthcare Hazard Control and Safety Management**

  James T. Tweedy, M.S., CHSM, CHSP,

  GR/St Lucie Press,

  ISBN: 1-57444-035-7
- **NFPA 10, 13, 30, 45, 49, 53, 70, 72, 99, 101, 704**
- **JCAHO Environment of Care, Essentials for Health Care, fourth edition, ECE 04**
- **Fire and Life Safety in Health Care Facilities, Marvin J. Fischer, NFPA, ISBN: 087765-453-0**
- **AIA 2001 edition, Guidelines for Design and Construction of Hospital and Health Care Facilities - ISBN 1-57165-00204**

Health Care

- Occupancy, Health Care
  - Ambulatory health care facility
  - Hospitals
  - Limited care facilities
  - Nursing homes

- Occupancy, Ambulatory Health Care
  - Four or more patients
  - Out patient basis
  - Provides anesthesia on outpatient basis that renders the patient incapable of taking action for self-preservation under emergency conditions

- Occupancy, Business
  - Clinics
  - Doctors offices

DA Safety program and the MTF

- AR 385-10
  - Comply with the host installation program
  - MTF Regulation
- Responsibilities
- Policy
- DA Safety program structure and activities
- Safety Standards
  - OSHA
  - Host installation
  - Abatement programs
- Safety and occupational health inspections
  - SASOHI
  - DOL
  - Contractor
  - Hazard reporting
- Standard Safety Staff Functions and Tasks

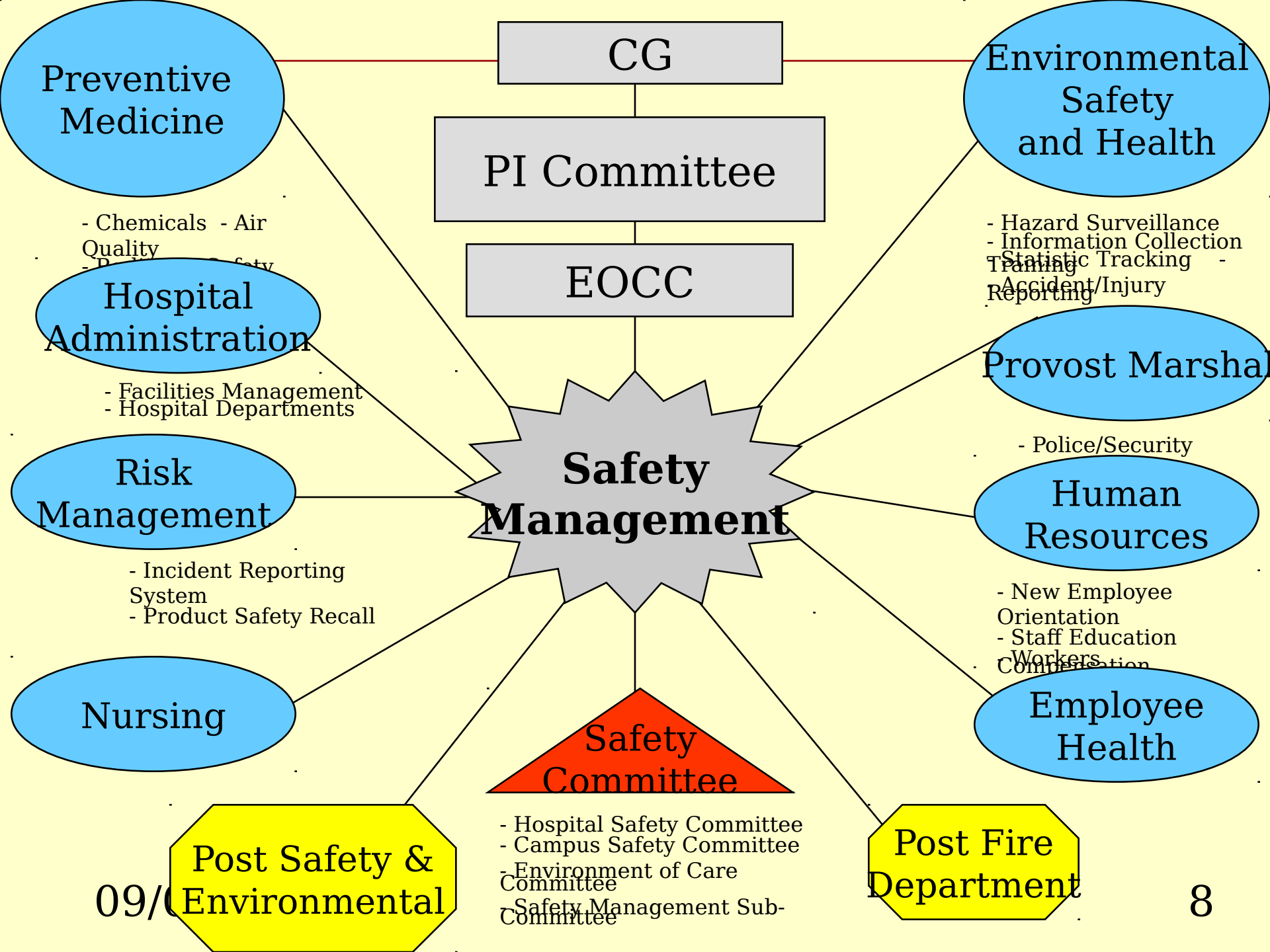
JCAHO

- Safety Management Program
  - Governing body
  - Structure of the safety program
    - hazard surveillance
    - accident reporting
    - training and education
    - review of program content (ICES)

JCAHO

Management of the Environment of Care

- **Goal is to provide a**
  –Safe, functional, supportive and effective environment for patients, staff members, and other individuals in the hospital. This is critical to providing quality patient care, achieving good outcomes, and improving patient safety


CG
PI Committee
EOCC
Safety Management
Preventive Medicine
- Chemicals - Air Quality
Hospital Administration
- Facilities Management
- Hospital Departments
Risk Management
- Incident Reporting System
- Product Safety Recall
Nursing
Environmental Safety and Health
- Hazard Surveillance
- Information Collection
- Statistic Tracking
Training
- Accident/Injury Reporting
Provost Marshal
- Police/Security
Human Resources
- New Employee Orientation
- Staff Education
Employee Health
Safety Committee
- Hospital Safety Committee
- Campus Safety Committee
- Environment of Care Committee
- Safety Management Sub-Committee
Post Safety & Environmental
Post Fire Department

JCAHO EC Standards

- **Environment of care is made up of three basic components:**
  - **building(s)**
  - **equipment**
  - **people**

Things that have the ability to influence patient outcomes

- Light (either natural and artificial)
- Privacy (visual and auditory)
- Space
- Security
- Orientation and access to nature and the outside
- Color
- Efficient layouts that support staffing and functional operations

Safety Officer Appointment Guidelines

- 29CFR1960
  - Agency must ensure staff adequate and trained
  - MEDCOM guidance
- OSHA
  - 500-1000 full time safety specialist
- JCAHO (text)*
  - 125< beds additional 25% devoted to safety
  - 125-250 < devote 50% to safety
  - 250 > full time safety manager
- MEDCOM has full time safety person
  - Regions/MEDCENs GS-12/13
  - MEDDACs/Clinics GS-11 – some MTF SMgr have other duties i.e. facility manager, housekeeping manager,

**Does not take into consideration that program is a total Army Safety Program*

HEALTHCARE HAZARD CONTROL

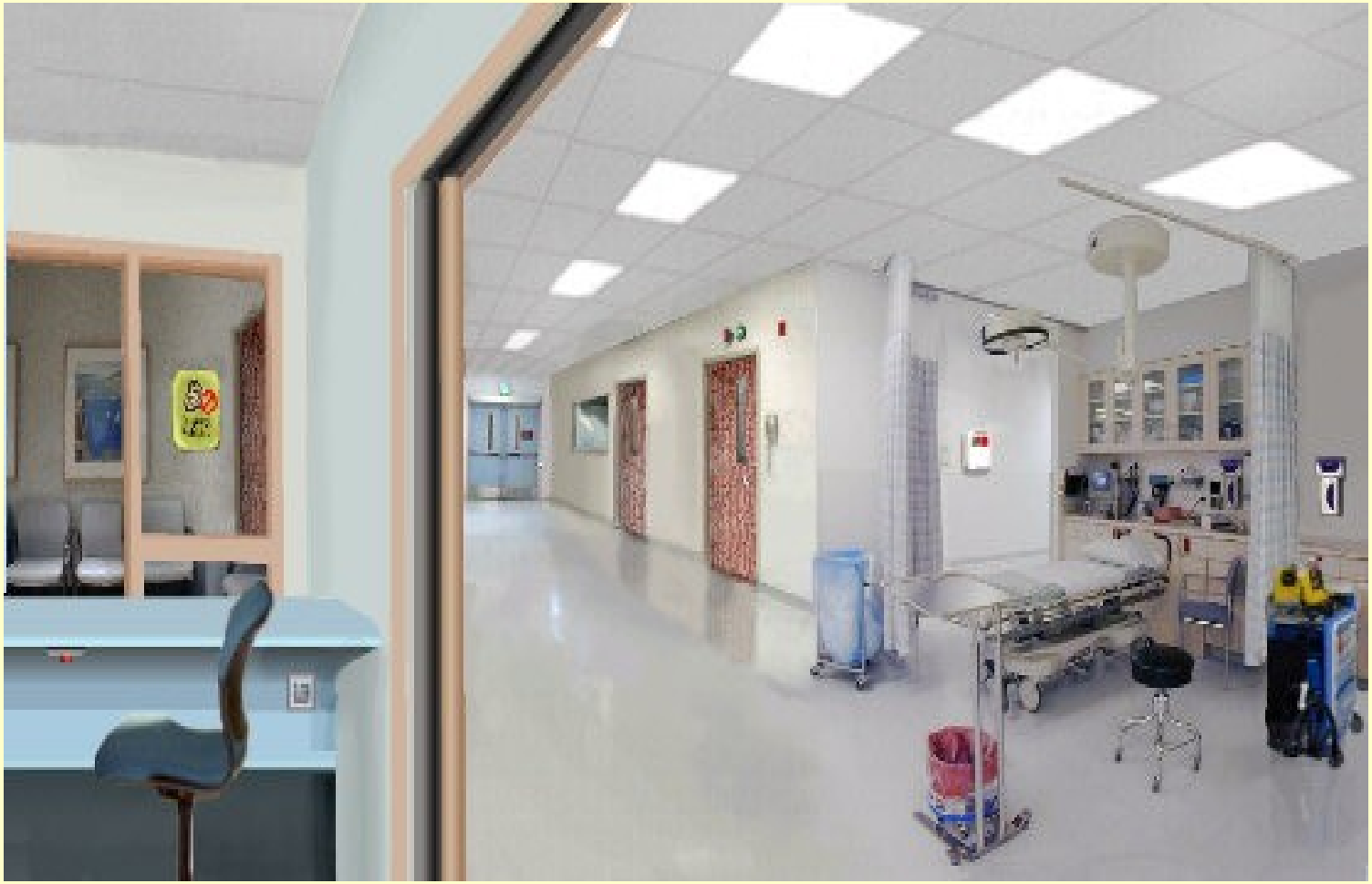
- Safety program management
  - Policy
  - Management Plans
  - Training
- Hazard surveillance
  - Safety hazards – patients/visitors and staff
  - Fire protection
- Risk assessment
- Accident reporting
  - Reporting
  - Investigating
    - Staff
    - Visitors and patients
  - Reduction strategies
- ICES
  - SOHC/EOCC – bimonthly
  - Annual evaluation – plan/program
  - Annual report to the governing body

Hazards

- Hospitals not safe place to work
  - Biological
    - BSL3
  - Ergonomic
    - Moving patients
  - Chemicals
    - Glutaraldehyde
  - Psychological
    - stress
  - Physical
    - Heavy fire doors, heat in burn unit
    - Standing for a long time OR

Kitchen

ER



Surgery

Operating Suites

WAG, Ventilation,
Oxides of Nitrogen

CMS

ETO STERILIZATION

Radiology

WARNING!
STRONG MAGNETIC FIELD

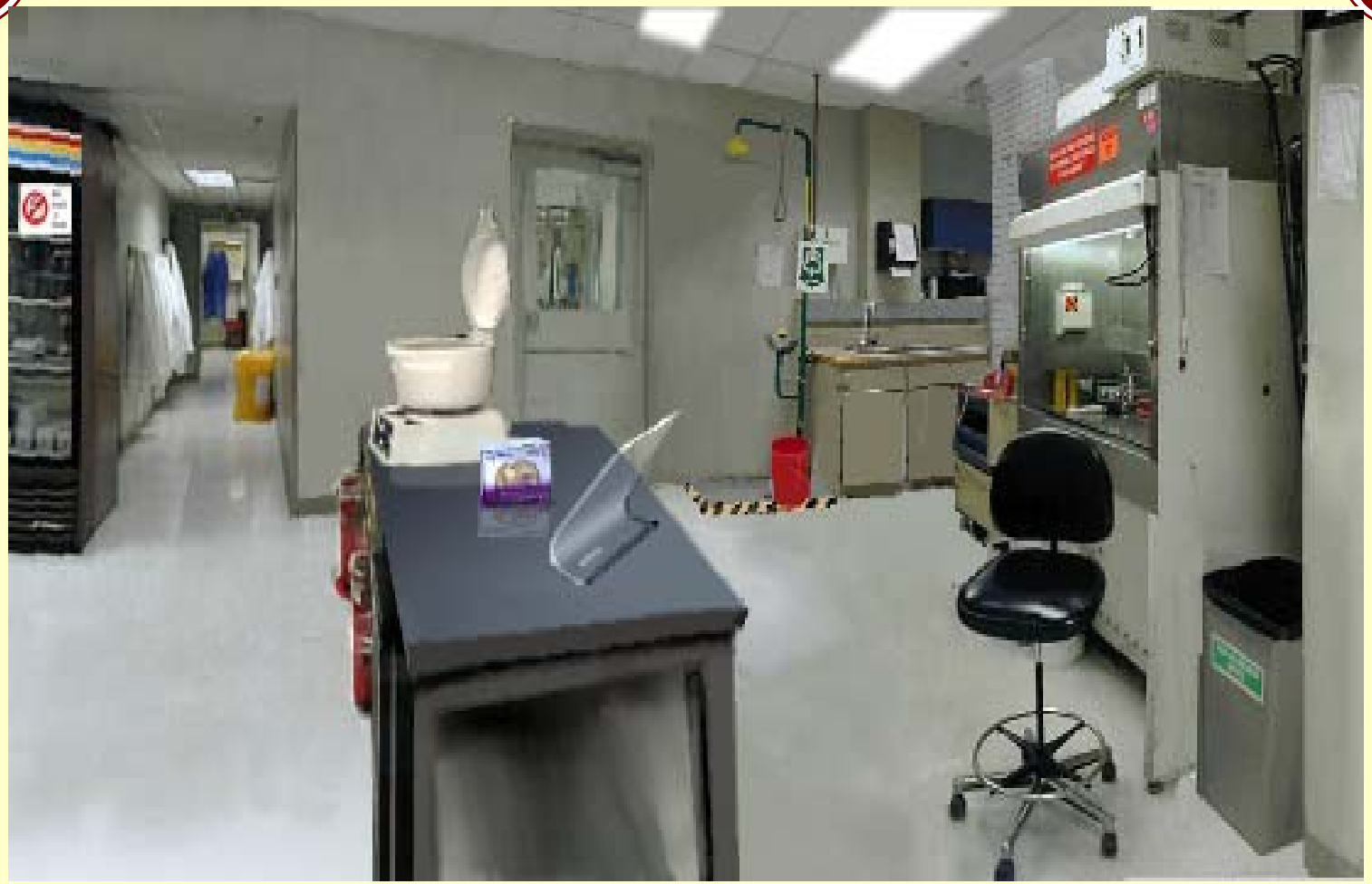
Physical Therapy

Housekeeping

Heliport

AirMed
WARNING
SECURITY MONITORED
AUTHORIZED PERSONNEL
ONLY
NO EXCEPTIONS
NO SMOKING
BEWARE OF FLYING DEBRIS
NO LITTERING

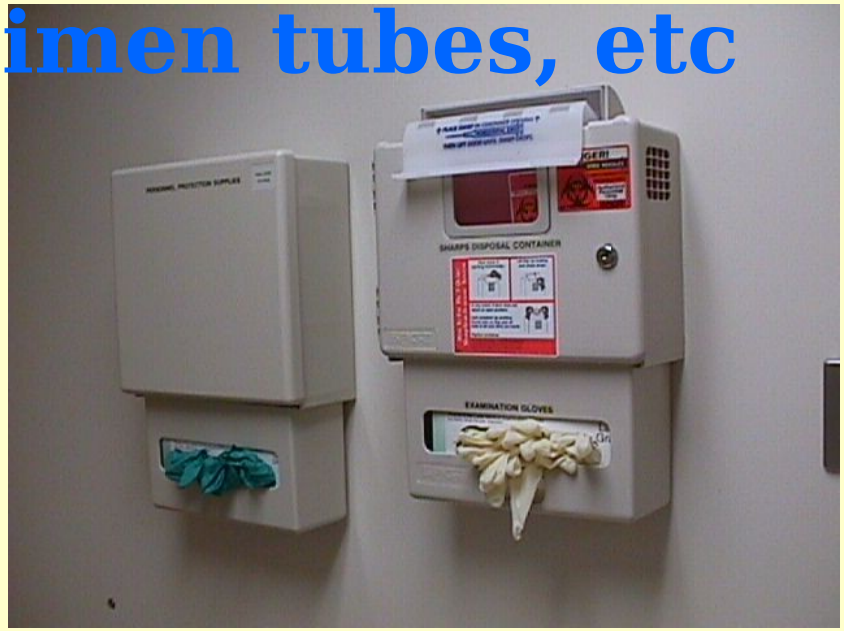
LAB



Usual

Researchers

- **Used needles, syringes, scalpel blades, IV tubing with attached needles, specimen tubes, etc**



Administration

Laundry

Hazard Surveillance

- Annual facility inspections
  - Qualified inspector 29CFR1960
- JCAHO – A/SASI/QHI/Monthly spots
  - Semiannual patient care areas
  - Annual all other areas
  - Document
  - Improvement measures

Hazard Control

- Controlling hazards
  - Three Es
  - PPE last resort – subpart I - 29CFR 1910
- Violation inventory log (VIL)
  - To supervisor
  - Can’t be corrected w/i 30 days must do HAP
  - Follow up every 30 days
  - Document

Personal Protective Equipment

- Hazard assessment
- PPE training
- Employer requirements
- Program review
- Respiratory protection
  - N95 mask

Emergency Eye Wash

- Blood borne pathogens
- Labs
- Warehouse
- Energy plant

Eye Wash Station

Has it been flushed weekly?

Where are they?

Monthly?

Flushed

Accident Investigation

- JCAHO
  - Patient
  - Visitors
  - Staff
- Army
- OSHA
  - Needle sticks

Training

- Ongoing monitoring of performance regarding actual or potential risks related to one or more of the following:
  - Staff knowledge and skills
  - Level of staff participation
  - Monitoring and inspections activities
  - Emergency and incident reporting and
  - Inspecting, preventive maintenance and testing of equipment and
- Emergency procedures that address
  - Facility-wide fire response needs
  - Area-specific needs and fire evacuation routes;
  - Specific roles and responsibilities of personnel at a fire's point of origin
  - Specific roles and responsibilities of personnel away from a fire's point of origin
  - Specific roles and responsibilities of personnel in preparing for building evacuation

NOTE: *each element has the same requirements for monitoring of performance and specific guidance for emergency procedures i.e. HAZAM must address emergency procedures that describe the specific precautions, procedures and protective equipment used during HAZMAT/waste spill or exposures.*

Training - cont

- Training requirements vary with activity/mission
  - Fire protection (life safety) EC standard
  - HAZMAT – EC standard
  - Accident reporting and investigation – EC standard
    - Slips, trips, falls, lifting safety, formaldehyde and other chemical exposures
  - PPE – OSHA
  - Biological hazards (blood borne pathogens) –OSHA
  - Laboratory safety – CAP
  - Radiation control – NRC
  - Equipment safety – EC standard
  - Emergencies/disasters (internal and external) – EC standard

Training cont

- Must be documented and address performance improvement
  - Orientation
  - Annual training
  - Ongoing training
  - On the spot training – failed fire drill, train the folks on the spot

Promoting Safety

- Policy letter from commander
- Published regulation
- Management plan for seven elements
- Quarterly safety kit
- Promotional activities
- Posters
- Bulletins and newsletters
- Off-duty programs

Use installation programs when at all possible

Safety Regulations

- Federal regulations
  - Federal register – searching
- Code of Federal Regulation
  - Title 10, 21, 29 (CFR 1910, 1926, 1960), 40, 44, 49
- OSHA
  - 29CFR 1960 – Federal agency requirements
  - Army will comply with 1910, 1926 per AR 385-10
- Air Force has AFOSH
- Navy has NAVOSH

OSHA Violations

- Serious violation
  - As a rule all DOD violations are serious or greater
- NOV issued to the installation or activity
- No fine
- NOVs go to agency safety and occupational health official
- Must abate –
  - JCAHO now looks at PFIs with specific time frame for abatement – if you fail to abate by ECD then a waiver must be granted from JCAHO

OSHA Form 300

- Army will now comply with 1904,- IAW 29CFR 1960 –
- MEDCOM has automated system and modified OSHA 300
  - 1 Jan 2002 must not show names for certain injuries/illness; needle sticks-show type of device, activity being performed when injured and show if using safety device
- JCAHO will look for trends and performance activities
  - Quarterly briefing to SOHC
  - Annual report to governing body
  - Is the organization improving, did you meet your goals for the prior year and show goals for next FY
- Injury/illness report is posted February each year through 30 April

Don't forget Measures of Merit per DODI 6055.1 – Military fatality rate; Class A accident rate for aircraft; civilian lost-time injury rate (based upon DOL FECA claims)

OSHA Incident Rates

- 100 full time employees using 200,000 employee-hours as the equivalent (100 employees working 40 hours per week for 50 weeks per year)

$$IR = \frac{\text{No. of injuries/illness x } 200{,}000}{\text{total hours worked by all employees during period covered}}$$

Can't get hours use: 168 x strength x months (168 x 1175 x 3 mos = 592200)

3 LTI x 200,000 = 600,000 / 592200 = 1.03

FDA

- FDA approves prescription and over-the-counter drugs, including labeling requirements.
  - Food, drug and cosmetic act
  - Fair packaging and labeling act
  - Radiation Control for Health and Safety Act relates to electronic products such as lasers, x-rays, and microwaves
  - Medical Device Regulation
    - Procedures in place to obtain, evaluate, and take corrective action in all situations concerning hazardous equipment, drugs and food substances
  - Safe Medical Device Act (SMDA)

    SMDA reporting

    SMDA definitions

    Patient adverse reactions

    User errors

Other Government Agencies

- National Institute of Occupational Safety and Health (NIOSH)
- Nuclear Regulatory Commission (NRC)
- Department of Transportation (DOT)
- Center for Disease Control and Prevention (CDC)
- Occupational Safety and Health Review Commission (OSHRC)
- Health Resources Services Administration (HRSA)
- Health Care Financing Administration (HCFA)
- Federal Emergency Management Agency (FEMA)
- State and local agencies

Americans with Disabilities Act

- ADA
  - Title I Employment
  - Title II Public Services and Transportation
  - Title III Public accommodations and Commercial Facilities
  - Title IV Telecommunications
  - Title V Miscellaneous
- UFAS

JCAHO

- Environment of Care – Essentials for Health Care (KIPS guide)
- Survey Process
  - Initial conference
  - Document review – Safety documents
    - SOC
    - Management plans
    - ILSM
    - Safety Officer’s JD

JCAHO EC Standards

- EC.1.10 – The organization manages safety risks
  - EC.1.10.1 - Requirement for a safety management plan
  - EC.1.10.2 Assignment of the safety manager on orders
  - EC1.10.3-ID individual to intervene whenever conditions immediately threaten life or health
  - EC1.10.4 Requirement for conducting a risk assessment
  - EC.1.10.5 Procedures and policies
  - EC1.10.6 Requirement for safety policies, distribution, enforcement and triennial review
  - EC1.10.7 LAB- *lab establishes policies and procedures*
  - EC1.10.8 Requirement for product safety recall response
  - EC.1.10.9 Requirement for maintenance and supervision of grounds and equipment
  - EC.1.20.1 Requirement for environmental rounds
  - EC.1.30-1.30.7 Requirement for smoking policy

EC.2.10
Organization identifies and manages its security risks

- EC.2.10 - Requirement to manage security risks
  - EC.2.10.1 - Requirement for security management plan
  - EC.2.10.2 – Designate person to manage security
  - EC.2.10.3 - Risk assessment (m)
  - EC.2.10.4 – Risk ID must be evaluated …(m)
  - EC.2.10.5 – Org IDs staff, patients who enter facility (m)
  - EC.2.10.6 – Controls access/egress in sensitive areas (m)
  - EC.2.10.7 – ID procedures to take in case of security incident
  - EC.1.10.8 – Address handling an infant or pediatric abduction
  - EC2.10.9 – ID, address VIP or media issues
  - EC.2.10.10 – Address/ID access to emergency care areas

HAZMAT/Waste

The organization manages its hazardous materials and wastes risks

- EC.3.10.1 HAZMAT/Waste management plan
- EC.3.10.2 Requirement to identify and inventory hazardous materials and waste (m)
- EC.3.10.3 Requirement for selection, storage, transport, use and disposal of HAZMAT/waste (m)
  - Chemicals
  - Chemotherapeutic materials
  - Radiological materials
  - Infectious and regulated medical waste, including sharps
- EC3.10.4 Adequate and appropriate space and equipment for safe handling and storing (m)
- EC.3.10.5 Monitors and disposes hazardous gases and vapors (m)
- EC.3.10.6 Procedures for response to include equipment for spills or exposures

HAZMAT, con't

- EC.3.10.7 Organization maintains documentation including required permits, licenses and adherence to other regulations (m)
- EC.3.10.8 Organization maintains required manifests for handling hazardous materials and waste (m)
- EC3.10.9 Hazardous material/waste is properly labeled (m)
- EC.3.10.10 Storage and processing areas are separated from other areas of the facility. (m)

Emergency Management
The organization addresses emergency management

- EC.4.10.1 Must conduct hazard analysis-need for services and ability to provide services
- EC.4.10.2 Must work with the community
  - Priorities for potential emergencies identified in the HVA
  - Org role in relation to a communitywide EMP
  - An all-hazard command structure w/i the organization that links with the community. (HEICS)
- EC.4.10.3Written EM plan describing process for disaster readiness and emergency management and implement it when applicable
- EC.4.10.4 Plan is developed with involvement from leadership
  - Includes medical staff
  - administrator, medical director, nursing leader and other clinical leaders
  - Leaders of programs and services i.e. department/division/services
- EC.4.10.5 Plan includes – mitigation, preparedness, response and recovery strategies, actions, and responsibilities for each priority emergency

Emergency Management, con't

- EC.4.10.6 Plan provides process for initiating the response and recovery phases of the plan, including a description of how, when, and by whom the phases are to be activated
- EC.4.10.7 Notification of staff and how response is initiated
- EC.4.10.8 External notification – local community, higher HQ – i.e. bioterrorist attack
- EC.4.10.9 Plan assigns staff to functions – (HEICS)
- EC.4.10.10 Plan provides for managing the following
  - Activities related to care, treatment, and services i.e. patient info, scheduling, modifying, or discontinuing services, controlling info, transportation
  - Staff support activities – housing, transportation, stress debriefing
  - Staff family support activities
  - Logistics for critical supplies i.e. pharmaceuticals, food, linen, water
  - Security – access control, crowd control, traffic control
  - Communication with the news media

Emergency Management con't

- EC.4.10.11 Org role w/i community – plan provides processes for establishing the means and methods to continue care treatment and services during the potential emergencies
- EC.4.10.12 Process for evacuating the facility- horizontally and vertically – when MTF cannot support care, treatment and services
- EC.4.10.13 Alternate care site identified in the plan to include
  - Transporting patients, staff and equipment to the alt care site
  - Tracking patients
  - Inter facility communications
- EC.4.10.14 Identification of providers and other personnel during emergency – (HEICS)

- EC.4.10.15 Plan provides process for cooperative planning among organizations that together provide services to a contiguous geographic area to facilitate sharing of information about the following:
  - Essential elements of their command structure and control centers
  - Names and roles of individuals in the command structure and EOC tel numbers
  - Resources/assets that can be shared during an emergency
  - Names of patients and deceased and ability to locate victims
- EC.4.10.16 Process for managing space, supplies and security
- EC.4.10.17 Process for providing for backup services
- EC.4.10.18 ID backup internal and external communication.
- EC.4.40.19 ID alternate roles and responsibilities of staff, when-where to report, who to report to
- EC.4.10.20 Alternate source for utilities – electricity, water, ventilation, fuel sources, med gases/vacuum system

Emergency Management, con't

- EC.4.10.21 Plan includes ID procedures for radioactive, biological and chemical decontamination
- EC.4.10.22 N/A
- EC.4.10.23 Plan includes links to community agencies
- EC.4.10.24 Program has 24 hour telephone answering capability to respond to patient and facility emergencies (m)
- EC.4.10.25 A roster of patients and log of medication dosages are accessible to staff on call for verification purposes (m)

Phases of activities

EC.4.10.5

Mitigation

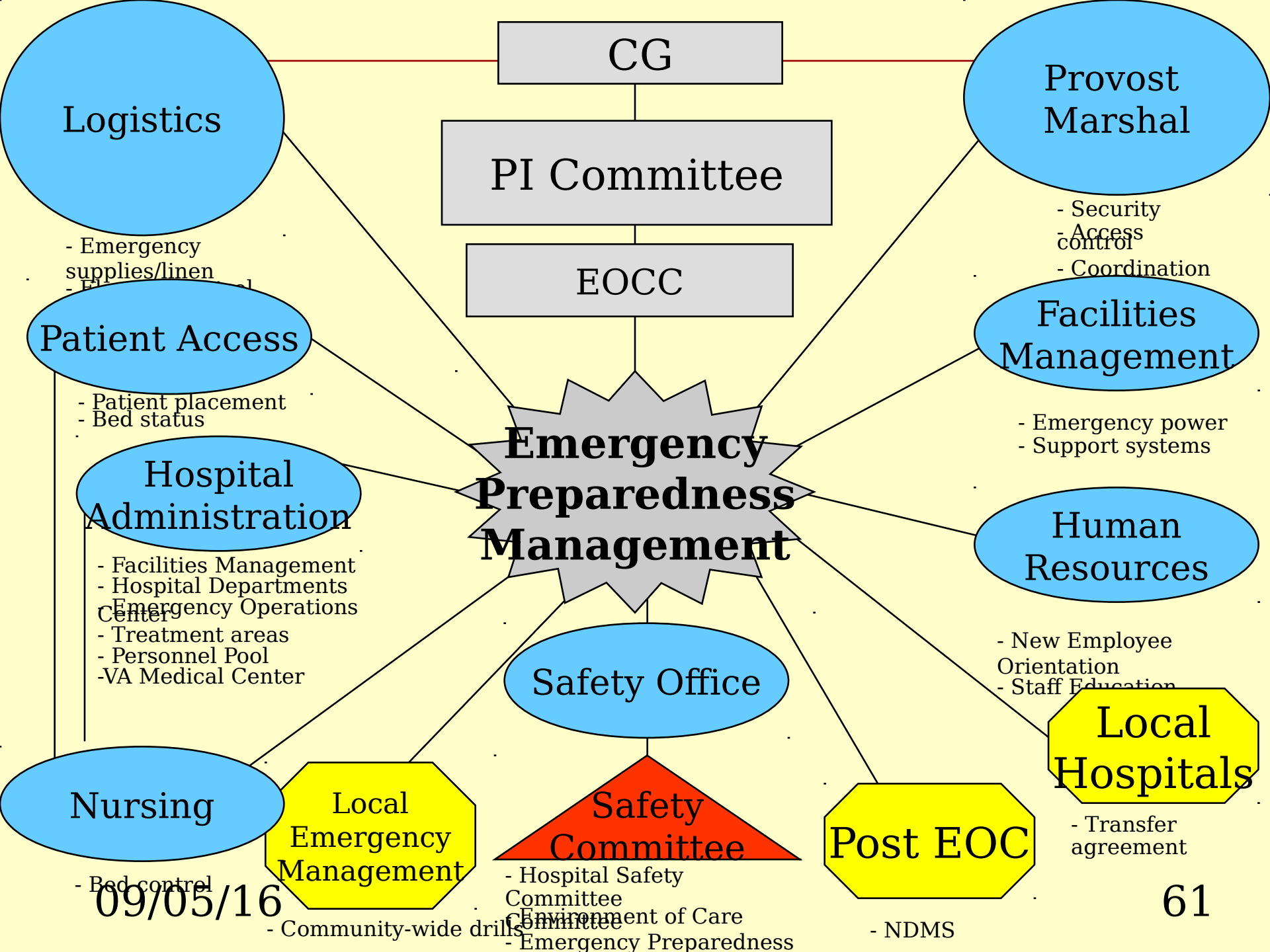
(pre-disaster loss management)

Preparedness

Response

Recovery

- Initiating the plan
- Continuing operations after a disaster


CG
PI Committee
EOCC
Logistics
- Emergency supplies/linen
Provost Marshal
- Security
- Access control
- Coordination
Patient Access
- Patient placement
- Bed status
Facilities Management
- Emergency power
- Support systems
Emergency Preparedness Management
Hospital Administration
- Facilities Management
- Hospital Departments
- Emergency Operations Center
- Treatment areas
- Personnel Pool
-VA Medical Center
Human Resources
- New Employee Orientation
- Staff Education
Safety Office
Local Hospitals
- Transfer agreement
Nursing
- Bed control
Local Emergency Management
- Community-wide drills
Safety Committee
- Hospital Safety Committee
- Environment of Care Committee
- Emergency Preparedness
Post EOC
- NDMS

EC.4.20
Drills are conducted regularly

- EC.4.20.1 Must conduct two drills a year
- EC.4.20.2 Drills are conducted 4 months apart and not more than 8 months apart
- EC.4.20.3 Hosp with ER/reception center – must conduct one mass cal a year
- EC.4.20.4 Must participate in one community wide drill a year
- EC.4.20.5 (LAB) Laboratory test the response phase of its emergency mgt plan annually either in response to actual or planned drill
- EC.4.20.6 Drill are critiqued to ID deficiencies and opportunities for improvement

Fire Safety
Organization Manages Fire Risks

- EC.5.10.1 Requirement for a fire prevention management plan
- EC.5.10.2 Requirement for protecting patients, visitors and property (m)
- EC.5.10.3 Requirement for inspecting, testing and maintaining fire systems (m)
- EC.5.10.4 Fire response plan that addresses
  - Facility wide fire response
  - Area specific needs including fire evacuation routes
  - Roles/responsibilities of staff/volunteers at point of origin – includes LIP
  - Roles/responsibilities of staff/LIP/volunteers away from P|OO
  - Role/responsibilities of staff, LIP/volunteers in preparing for evacuation
- EC.5.10.5 Requirement for reviewing acquisition of bedding drapes
- EC.5.10.6 LAB – lab maintains free and unobstructed access to exits (m)
- EC.5.10.7 -10 address BHC- include fire response, door into clients sleeping room, window in sleeping room large enough to escape, door leading directly to outside or a secondary means of egress and a detector in or near the clients sleeping room

EC.5.20
New constructed and existing environments are designed and maintained to comply with the Life Safety Code

- EC.5.20.1 Each building in which individuals served are housed or receive treatment and services comply with the LSC NFPA 101-2000 edition – or –If the facility does not meet LSC but the resolution through the following
  - An equivalency approved by Joint Commission – or –
  - Continued progress in completing an acceptable Plan for Improvement (SOC)
- EC.5.20.2 Statement of Conditions (S)C has been prepared
- EC.5.20.3 N/A
- EC.5.20.4 LAB – Lab works with its accredited organization in which it is located to take part in and understand the laboratory role in life safety

EC.5.30
Fire drills are conducted regularly

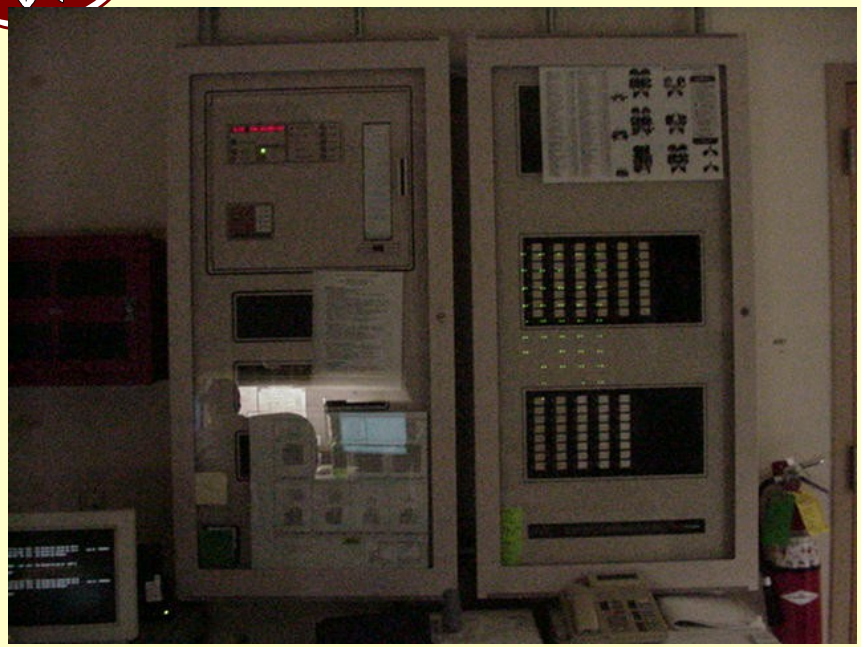
- EC.5.30.1 Fire drills are conducted -all personnel, all shifts quarterly (m)
- EC.5.30.2 Annually for free standing buildings classified as business
- EC.5.30.3 Fire drills are conducted annually – non patient care areas
- EC.5.30.4 At least 50% are unannounced
- EC.5.30.5 All staff will participate as written in facility fire plan (m)
- EC.5.30.6 Drills are conducted to ID deficiencies and improve
- EC.5.30.7 The effectiveness of fire response training (per plan) is evaluated at least annually
- EC.5.30.8 The following staff knowledge is evaluated during the drill
  - How to sound alarms – location of pull station (RACE), voice
  - When and how to transmit for off-site response-
  - Containment of smoke and fire – close doors - DIP
  - Transfer of individuals served to areas of refuge
  - Fire extinguishment
  - Specific fire response duties
  - Preparation for building evacuation

EC.5.40
The organization maintains fire-safety equipment and building features

- EC.5.40.1 Documentation of equipment testing (m)
  - Quarterly signal devices
  - All valve tamper switches, water flow devices at least semiannually
  - All duct detectors electromechanically releasing devices, heat detectors, manual fire alarm boxes and smoke detectors – annual testing
- EC.5.40.2 Documentation - alarm notification devices, audible devices, speakers, visible devices – annual testing (m)
- EC.5.40.3 Documentation – Off premises emergency notification – alarm transmission to fire dept – tested quarterly (m)
- EC.5.40.4 Documentation – water based automatic fire extinguishing systems, fire pumps – tested weekly under no flow conditions (m)
- EC.5.40.5 Documentation – water-based automatic fire extinguishing systems , water storage tanks high-and low water level alarms – tested semiannually (m)

EC.5.40 – cont
The organization maintains fire-safety equipment and building features

- EC.5.40.6 Documentation – water-based automatic fire extinguishing systems, all water storage tanks low-water temp alarm (during cold weather only) – annual testing
- EC.5.40.7 Documentation – for water based automatic fire extinguishing systems, main drain tests are conducted at least annually all risers (m)
- E/C.5.40.8 All fire department connections are inspected quarterly (m)
- EC.5.40.9 All fire pumps are tested at least annually under flow (m)
- EC.5.40.10 Kitchens systems are tested semi annually (m)
- EC.5.40.11 Carbon dioxide/gaseous automatic fire extinguishing systems are tested at least annually (m)
- EC.5.40.12 Portable fire extinguisher – clearly identified, inspected at least monthly and maintained at least annually (m)
- EC.5.40.13 Standpipes occupant hoses are hydrostatically 5 years after installation and every three years thereafter-water flow every 5 hrs (m)

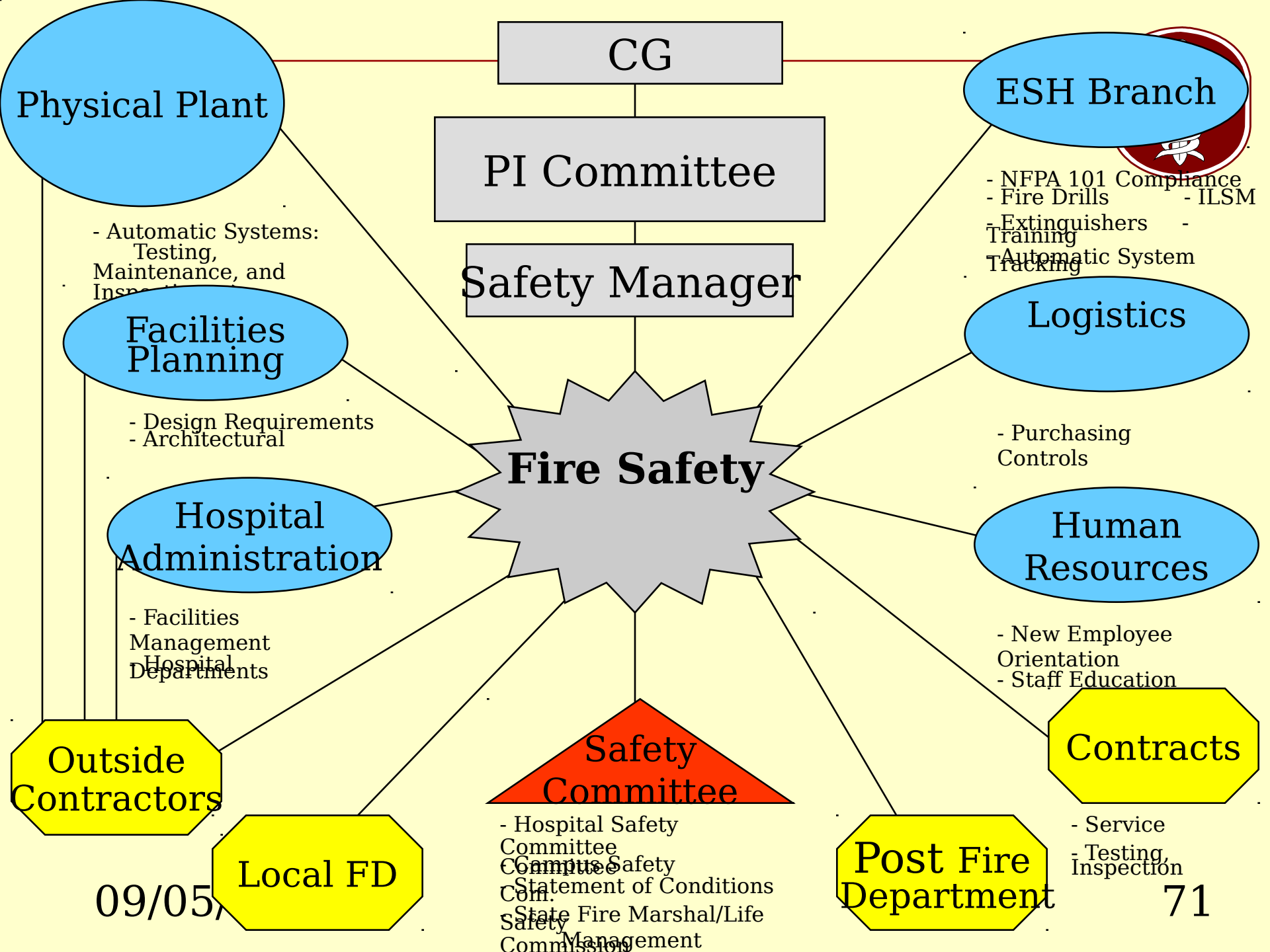


EC.5.40 cont

- EC.5.40.14 Dampers tested every four years (m)
- EC.5.40.15 automatic smoke-detection shutdown devices (HVAC)– annual (m)
- EC.5.40.16 Fire doors are tested – full closing – annual (m)
- EC.5.40.17 LAB - Fire alarm/detection-all components – annual testing and preventive maintenance (m)
- EC.5.40.18 LAB - Documentation is available that automatic fire-extinguishing systems are inspected and tested (with or without discharge) –annual (m)
- EC.5.40.19 LAB - Documentation is available that fans or dampers in air-handling and smoke-management systems are functional at all times (m)
- EC.5.40.20 LAB – Documentation is available that portable fire extinguishers are clearly identified, inspected monthly and maintained annually (m)

EC.5.50
Interim Life Safety Measures (ILSM)

- EC.5.50.1 Procedures are available for ILSM
- EC.5.50.2 Criteria to evaluate deficiencies/hazards to determine when and to what extent one or more of the following apply:
  - Exit access – free and unobstructed egress – construction area inspected daily
  - Access to emergency services for fire, police emergency forces
  - Life safety systems working – detection/notification/suppression
  - Construction separation smoke tight/noncombustible
  - Additional fire-fighting equipment and staff training
  - No smoking in or near construction area – all facilities smoke free
  - Reduce storage, debris, trash and remove daily, fire load lowest possible
  - Two fire drills per shift per quarter
  - Increase hazard surveillance
  - Train staff to compensate for impaired structural or compartmentalization features of fire safety
  - Increase training – promote awareness-fire safety building deficiencies, construction hazards and ILSM
- EC.5.50.3 Implement ILSM as defined in MTF policy

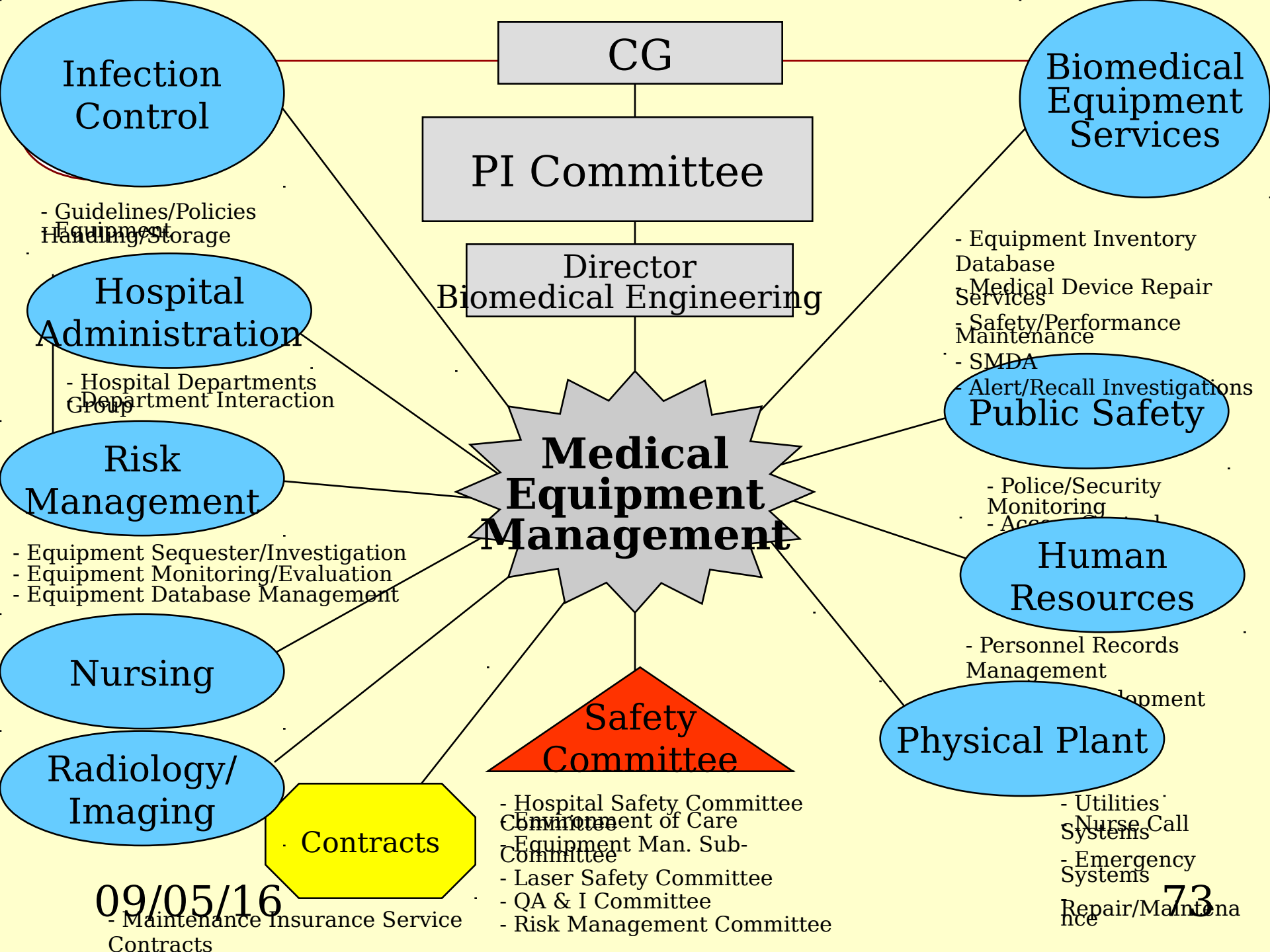

CG
PI Committee
Safety Manager
Physical Plant
- Automatic Systems: Testing, Maintenance, and Inspection
ESH Branch
- NFPA 101 Compliance
- Fire Drills
- Extinguishers
- ILSM Training
- Automatic System Tracking
Facilities Planning
- Design Requirements
- Architectural
Logistics
- Purchasing Controls
Fire Safety
Hospital Administration
- Facilities Management
- Hospital Departments
Human Resources
- New Employee Orientation
- Staff Education
Outside Contractors
Safety Committee
- Hospital Safety Committee
- Campus Safety Committee
- Statement of Conditions
- State Fire Marshal/Life Safety
Contracts
- Service
- Testing, Inspection
Local FD
Post Fire Department
Com.
Management
Commission

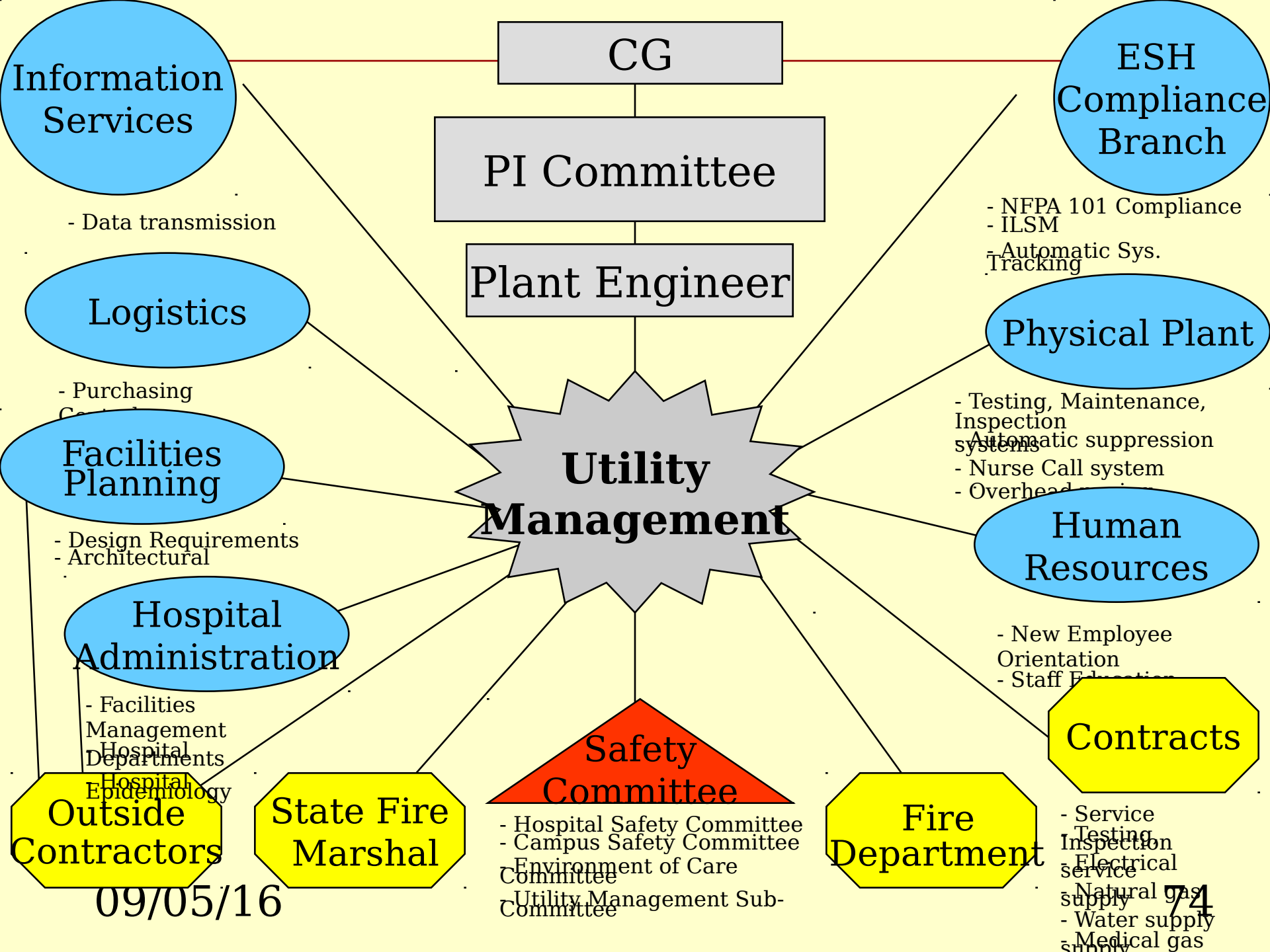
Medical Equipment
Utility Management

- EC.6.10 The organization manages medical/laboratory equipment risks
- EC.6.20 Medical/laboratory equipment is maintained, tested, and inspected

<u>Utility Management</u>

- EC.7.10 The organization manages its utility risks
- EC.7.20 The organization provides an emergency electrical power source
- EC.7.30 The organization maintains, tests and inspects its utility systems
- EC.7.40 The organization maintains, tests, and inspects its emergency power systems
- EC.7.50 The organization maintains, tests and inspects its medical gas and vacuum systems


CG
PI Committee
Director Biomedical Engineering
Medical Equipment Management
Infection Control
- Guidelines/Policies
- Equipment Handling/Storage
Hospital Administration
- Hospital Departments
- Department Interaction Group
Risk Management
- Equipment Sequester/Investigation
- Equipment Monitoring/Evaluation
- Equipment Database Management
Nursing
Radiology/ Imaging
Contracts
- Maintenance Insurance Service Contracts
Safety Committee
- Hospital Safety Committee
- Environment of Care Committee
- Equipment Man. Sub-Committee
- Laser Safety Committee
- QA & I Committee
- Risk Management Committee
Biomedical Equipment Services
- Equipment Inventory Database
- Medical Device Repair Services
- Safety/Performance Maintenance
- SMDA
- Alert/Recall Investigations
Public Safety
- Police/Security Monitoring
Human Resources
- Personnel Records Management
Physical Plant
- Utilities
- Nurse Call Systems
- Emergency Systems Repair/Maintenance


CG
PI Committee
Plant Engineer
Utility Management
Information Services
- Data transmission
ESH Compliance Branch
- NFPA 101 Compliance
- ILSM
- Automatic Sys. Tracking
Logistics
- Purchasing
Physical Plant
- Testing, Maintenance, Inspection
- Automatic suppression systems
- Nurse Call system
- Overhead
Facilities Planning
- Design Requirements
- Architectural
Human Resources
- New Employee Orientation
- Staff Education
Hospital Administration
- Facilities Management
- Hospital Departments
- Hospital Epidemiology
Contracts
- Service
- Testing
- Inspection
- Electrical service
- Natural gas supply
- Water supply
- Medical gas supply
Safety Committee
- Hospital Safety Committee
- Campus Safety Committee
- Environment of Care Committee
- Utility Management Sub-Committee
Outside Contractors
State Fire Marshal
Fire Department

EC.8.10
Appropriate Environment

- EC.8.10 The organization establishes and maintains an appropriate environment
- EC.8.10.1 Interior space should be the following:
  - Appropriate to the care, treatment and services provided-in relation to age and other chrematistics
  - Closet and drawer space
  - Long term care – school, recreational needs, daily activities
  - LTC – equipment for rehabilitation
- EC.8.10.2 Furnishing and equipment should do the following
  - Be maintained in safe and good repair
  - Reflect individual services level of ability and needs
  - LTC – normalize living environment

EC.8.10 cont

- EC.8.10.3 LTC – outside areas are the following (m)
  - Provided when required by the care, treatment and services
  - Appropriate and safe – related to age and characteristic
  - Used during appropriate seasons
- EC.8.10.4 Areas used are safe, clean, functional and comfortable (m)
- EC.8.10.5 Lighting is suitable (m)
- EC.8.10.6 BHC – lighting is controlled by clients (m)
- EC.8.10.7 Ventilation, temp appropriate, no odors (m)
- EC.8.10.8-10 BHC – waiting areas, water, restrooms
- EC.8.10.11Door locks other structural restraints – consistent with needs of individual served – Emergency egress provided for all locked spaces
- EC.8.10.12-15 apply to BHC, LTC
- EC.8.10.16 LAB work areas are safe for staff and visitors
- EC.8.10.17 LAB Appropriate/sufficient equipment
- EC.8.10.18 LAB Sufficient workspace
- EC.8.20 BHC, LTC The organization establishes and maintains an appropriate dining environment

EC.8.30
The organization manages the design and building of the environment when it is renovated, altered or newly created

- EC.8.30.1 When space is renovated, altered or new construction – follow
  - Applicable state rules and regulations
  - Guidelines for Design and Construction of Organizations and Health Care Faculties 2001 edition, published by American Institute of Architects or standards or guidelines that provide equivalent design criteria
- EC.8.30.2 When planning demolition, construction or renovation do a risk assessment – scope and nature of activities determine risk assessment (m)
- EC.8.30.3 use risk criteria – infection control, noise, vibration, emergency procedures
- EC.8.30.4 implement control to reduce risk, minimize impact
- EC.8.30.5 LAB – Laboratory guidelines; AIA guide, or similar guidelines;

EC.9.10
The organization monitors conditions in the environment

- EC9.10.1 The organization establishes and implements processes for reporting and investigating the following: (m)
  - Injuries to individuals served or others coming to the organization's facilities as well as incidents of property damage
  - Occupational illnesses and injuries to staff
  - Security incidents involving individuals served, staff or others coming to the organization’s facilities or property
  - Hazardous materials and waste spills, exposures, and other related incidents
  - Fire safety management problems, deficiencies, and failures
  - Equipment-management problems, deficiencies, and failures
  - Utility systems management problems, failures, or user errors

EC9.10.2

- EC.9.10.2 – The organization's leaders assign a person(s) (hereafter referred to as the "assigned person(s)") to monitor and respond to conditions in the organization's environment. The assigned person performs the following tasks. (m)
  - Coordinates the ongoing, organization wide collection of information about deficiencies and opportunities for improvement in the environment
  - Coordinates the ongoing collection and dissemination of other sources of information, such as published hazard notices or recall reports
  - Coordinates the preparation of summaries of deficiencies, problems, failures, and user errors related to managing the environment
  - Coordinates the preparation of summaries on findings, recommendations, actions taken, and results of performance improvement (PI) activities
  - Participates in hazard surveillance and incident reporting
  - Participates in developing safety policies and procedures

EC.9.10.3 - .9

- EC.9.10.3 - The organization establishes and implements a process(es) for on going monitoring of performance regarding actual or potential risk(s) in each of the environment of care management plans.
- EC.9.10.4 – Each of the environment of care management plans are evaluated at least annually
- EC.9.10.5. – The objectives, scope, performance and effectiveness of each of the environment of care management plans are evaluated at least annually
- EC.9.10.6 through 9.10.8 NA
- EC.9.10.9 – Environmental safety monitoring and response activities are integrated into the individual served safety program required in the “Leadership” chapter of the applicable manual. (m)

EC.9.20

The organization analyzes identified environment issues and develops recommendations for resolving them

- EC.9.20.1 – The organization establishes and follows a multidisciplinary process for resolving environment of care issues that involves representatives from clinical, administrative, and support services, when applicable (m)
- EC 9.20.2 –EOCC/SOHC meets at least bimonthly to address EC issues.
- EC.9.20.3 – The organization analyzes EC issues in a timely manner (m)
- EC.9.20.4 – Recommendations are developed and approved as appropriate (m)
- EC.9.20.5 - Appropriate staff establishes measurement guidelines (m)
- EC.9.20.6 – Environment of care issues are communicated to the organization's leaders and person(s) responsible for PI activities. (m)
- EC.9.20.7 – NA
- EC.9.20.8 One or more PI activities is communicated at least annually to the organization’s leaders based on the ongoing performance monitoring of the environment of care management plans (m)
- EC.9.20.9 Safety issues are communicated, when appropriate to those responsible for managing the individual served safety program required in the “Leadership” chapter of the applicable manual. (m)

EC.9.30
The organization improves the environment

- EC.9.30.1 - Appropriate staff shall participate in implementing recommendations (m)
- EC.9.30.2 – Appropriate staff monitors the effectiveness of the recommendation’s implementation (m)
- EC.9.30.3 – Measurement results are reported through appropriate channels, including the organization’s leaders (m)
- EC.9.30.4 – Measurement results are reported to the multidisciplinary improvement team responsible for resolving environment of care issues (m)
- EC.9.30.5 – Results of measurement are reported (when appropriate) to those responsible for managing the individual served safety program required in the “Leadership” chapter of the applicable manual (m)

JCAHO cont

- Building tour
- Environment of Care Interview
  - Document review all EC standards
  - Safety officer leads
  - Review accidents, hazard surveillance, fire drills, HAZMAT/Waste documents
  - Seven elements
  - ICES

Healthcare-Related

- NFPA 10 Fire extinguishers
- NFPA 13 Sprinkler systems
- NFPA 30 Flammable & combustibles
- NFPA 45 Laboratories (labs located in the hospitals NFPA 99)
- NFPA 50 Bulk Oxygen systems
- NFPA 70 National Electrical Code
- NFPA 72 Signaling systems
- NFPA 90A HVAC
- NFPA 99 Health care facilities guide
- NFPA 101 Life Safety Code
- NFPA 220 Building construction
- NFPA 704 Fire Hazards of Materials

Fire Protection

R A C E

RESCUE

If a patient (or patients) are in immediate danger, move them out of the room or area where the fire is located.

Annunciators and Pull Stations

Pull Station Locations

Annunciator

How Do You Know Your Fire Zone?

- Chime/Strobe

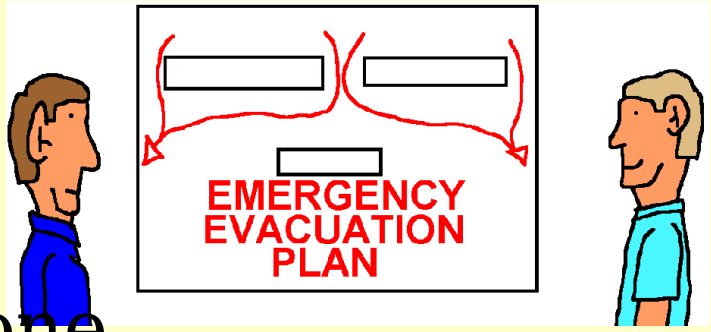
Contain

- Close the door to the room where the fire is located.
- Close all other doors.
- Use towels to stuff under the door –
  - Wet helps
- Waste Basket
  - Cover

Med Gas zone valve, alarm and ID

Evacuate or Extinguish

- Evacuate
  - Lateral
  - Into the next fire zone
- Extinguish
  - Small
  - Know locations of Fire Extinguishers



ABC Fire Extinguishers

P. A. S. S.

Fire Response cont

- Occupant protection – patients incapacitated
- Fire protection and life safety systems, equipment, and components maintenance
- Reporting problems, failures, and user errors
- Reviewing/monitoring acquisitions for LS
- Training and education
- Annual review of the management plan/program

Crowded Corridor

Obstructed Exit Corridor

Cluttered Egress Corridor

Fire Drills

- All personnel on all shifts
  - Quarterly patient care buildings
  - Annual non patient care
- What will staff do during Code Red
  - POI - RACE
  - Outside POI – listen for further instructions, assist staff in POI, evacuate

Evacuation Procedures

Film on Healthcare evacuation

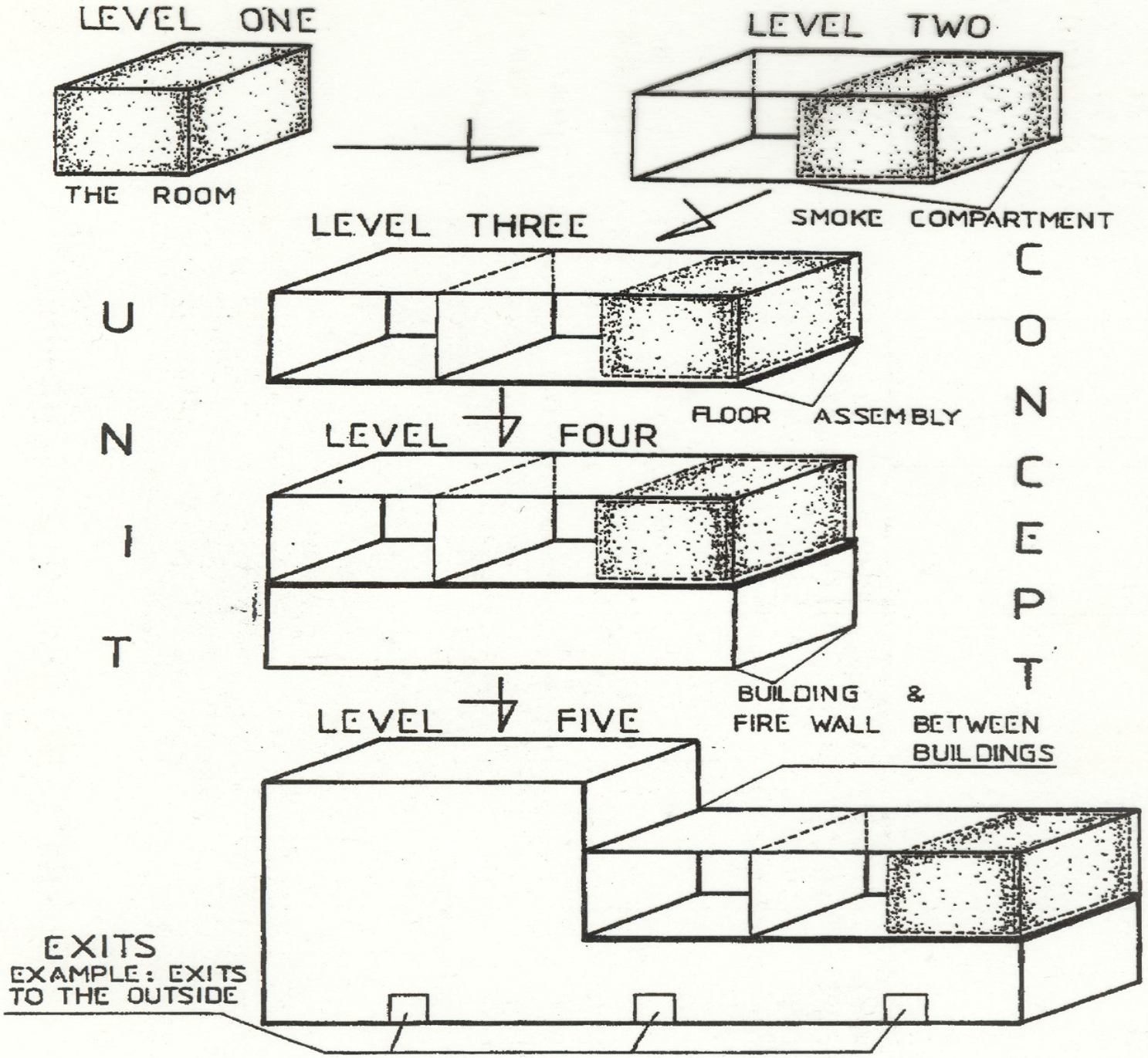
Ignitable Materials

- Hazard surveillance critical in MTFs
  - Patients can not ambulate
    - ORs, PACU, ICUs
- Healthcare facilities must be fully sprinkled
- No flammable material in HC facilities
  - No more than 32 gal of trash - unprotected
  - 1 hr FRR
- Oxygen shut off

Fire Containment

- Unit concept
  - Room
  - Smoke compartment
  - Floor assembly
  - Building
  - Exits
- ILSM
- FSES
- Equivalencies

Fire Door Held Open

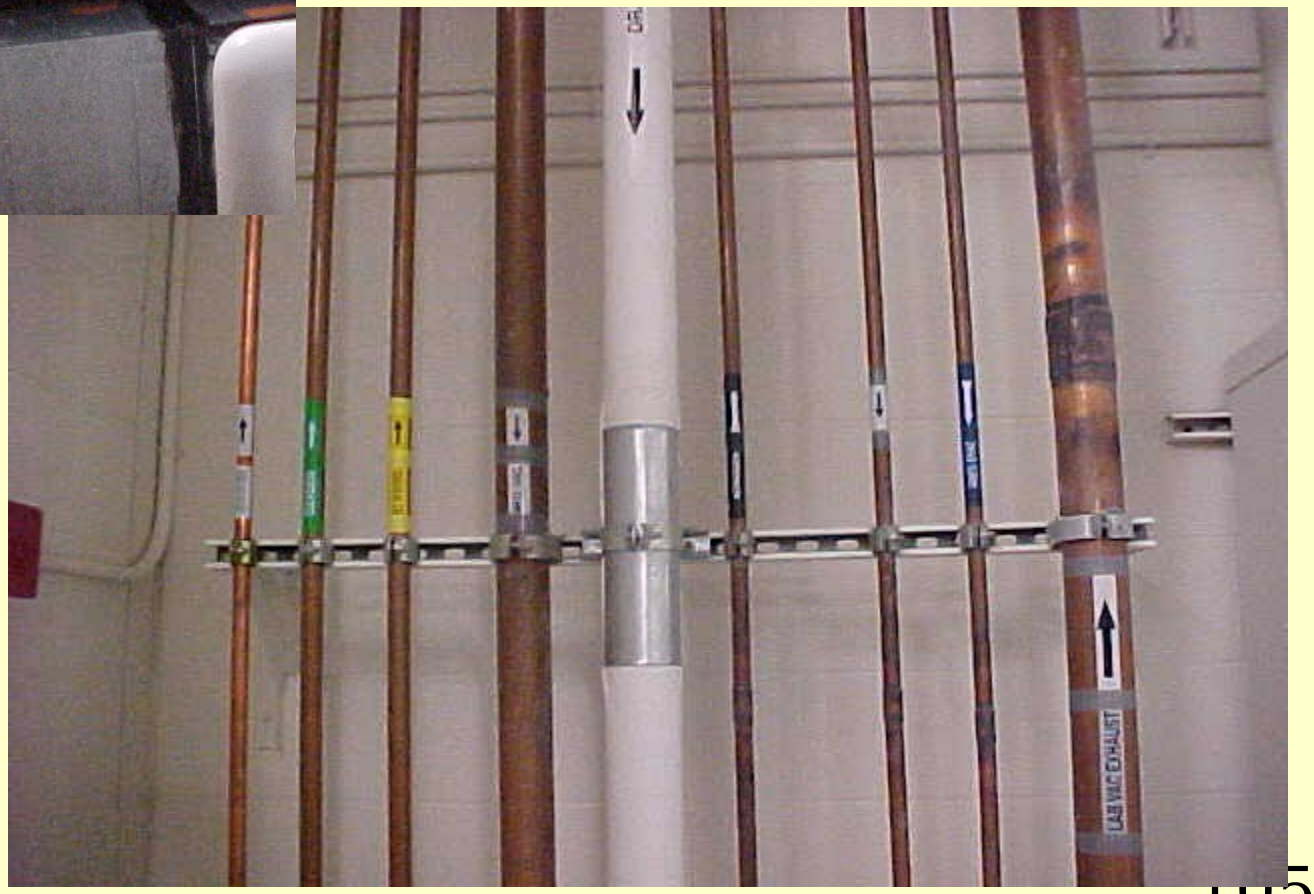

LEVEL ONE
THE ROOM
LEVEL TWO
SMOKE COMPARTMENT
LEVEL THREE
FLOOR ASSEMBLY
LEVEL FOUR
BUILDING & FIRE WALL BETWEEN BUILDINGS
LEVEL FIVE
EXITS
EXAMPLE: EXITS TO THE OUTSIDE
UNIT CONCEPT

Door Held Open

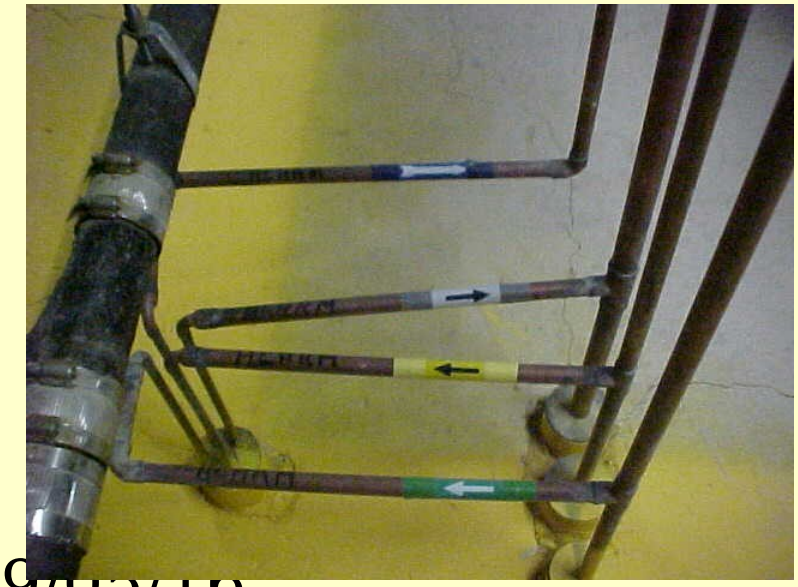
Physical Plant Safety

- Facility fire prevention –
  - Assessment of all equipment
  - Testing of alarms, detectors and pull stations
  - Evaluation of housekeeping
  - Inspection of sprinkler pressure
  - Water availability and hydrant operations
    - Place mobile carts on floors for standpipe connections for FD
  - Annual suppression, detection and activation systems checks
    - ESCS
  - Coordination with Post fire marshal, DPW

Mechanical Room: Riser location



Lines in the IBS: Labeled and color coded with directional arrows



Healthcare Ergonomics

- Ergonomics
  - Mechanical lifts
  - Gait belts
  - Wheelchairs
  - Shower/toilet chairs
  - Bath lifts
  - Scales
  - Beds

Healthcare Lifting

- Major problem in healthcare facilities
  - Back injuries
    - Nursing units
    - warehouse
  - Mechanical lifting devices
  - Back school

Slips and Falls

- Common in health care
  - Staff
  - Patient
  - Visitor
- Prevention program
- Fall prevention management – DN
- Management elements
  - Hazard surveillance
  - Emphasis on high-risk areas
  - Analysis of accidents/incidents to determine trends
  - Awareness training for staff
  - Program assessment
  - Annual review

Maintenance Dept Safety

- DPW
- In house
- Contractor
  - Safety plan
  - Hazard control measures
- Covers the spectrum of safety
  - General industry 1910
  - Construction 1926
- JCAHO

Plant Safety cont

- Confined Spaces – 1910.146
  - Permit required spaces
  - Entry permits
  - Emergency procedures
- Hearing Conservation
  - Controlling noise hazards - 1910.95
  - 3 Es
  - Testing – 8 hour TWA 85 dBA
  - Training and education where exposures equal or exceeds 85 dBA
  - Abatement

Construction Safety

- New construction
- Renovation
- Must perform risk assessment
  - ID hazards that could compromise patient care
  - Address impact construction could have on air quality, infection control, utility requirements, noise, vibration and emergency procedures
- Select and implement proper controls to reduce risk and to minimize impact on patient care activities

Electrical Safety

- NFPA 99
- Hospital grade receptacle
- Emergency receptacles
- Electrical tester
  - Leakage tester – tick tac
  - Receptacle tester
  - Tension tester
- Critical for patients that are compromised
- Report leakage to medical maintenance
- Staff personal electrical equipment policy
- All equipment/appliances must be grounded in patient care areas
- Wet areas – PT, pool, burn unit
- Extension cords
- Multiple-outlet strips are prohibited
- LOTO

Child Proof (tramper proof) Receptacle

Warning Signs

- Import in healthcare
  - MRI
  - Nuclear medicine
  - Radiation oncology
  - Energy plant
  - Labs: clinical, research, animal
    - Biosafety levels
    - Hoods
    - Biological safety cabinets – class I-III
- Follow *CDC/NIH Biosafety in Microbiological and Biomedical Laboratories (US Dept. HHS and NIH)

Apply to laboratories involved in work with infectious microorganisms and laboratory animals

Plant Management

- JCAHO
  - Current inventory
  - PM scheduled – completed
  - Each component evaluated for testing, inspections, calibration and servicing
  - Procedures for reporting outages and repair of failed systems
  - Plans for dealing with total utility failures and subsequent evacuation of patients
  - Records for inspections, tests and repairs

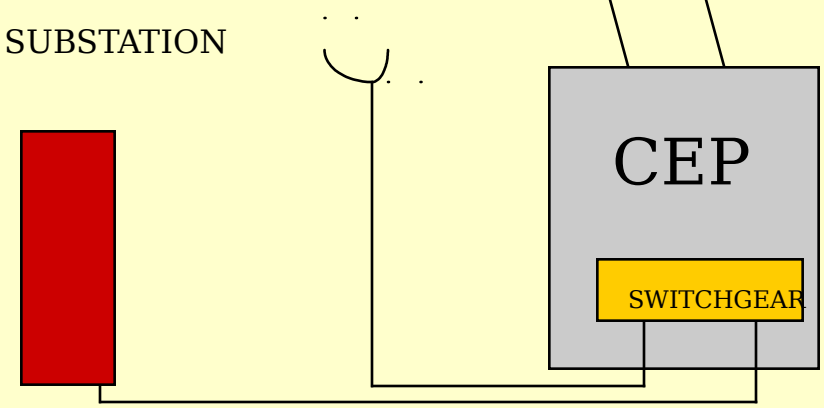
Utility Management Emergency Procedures

- Utility Management Plan must
  - Address procedures to follow during disruptions and failures
  - Identify alternate utility sources
  - Discuss operating procedures for shutoff controls
  - Procedures for notifying staff in affected areas
  - Guidance on how to obtain repair services
  - Cover the requirements and methods for emergency clinical interventions

Electrical Power Distribution

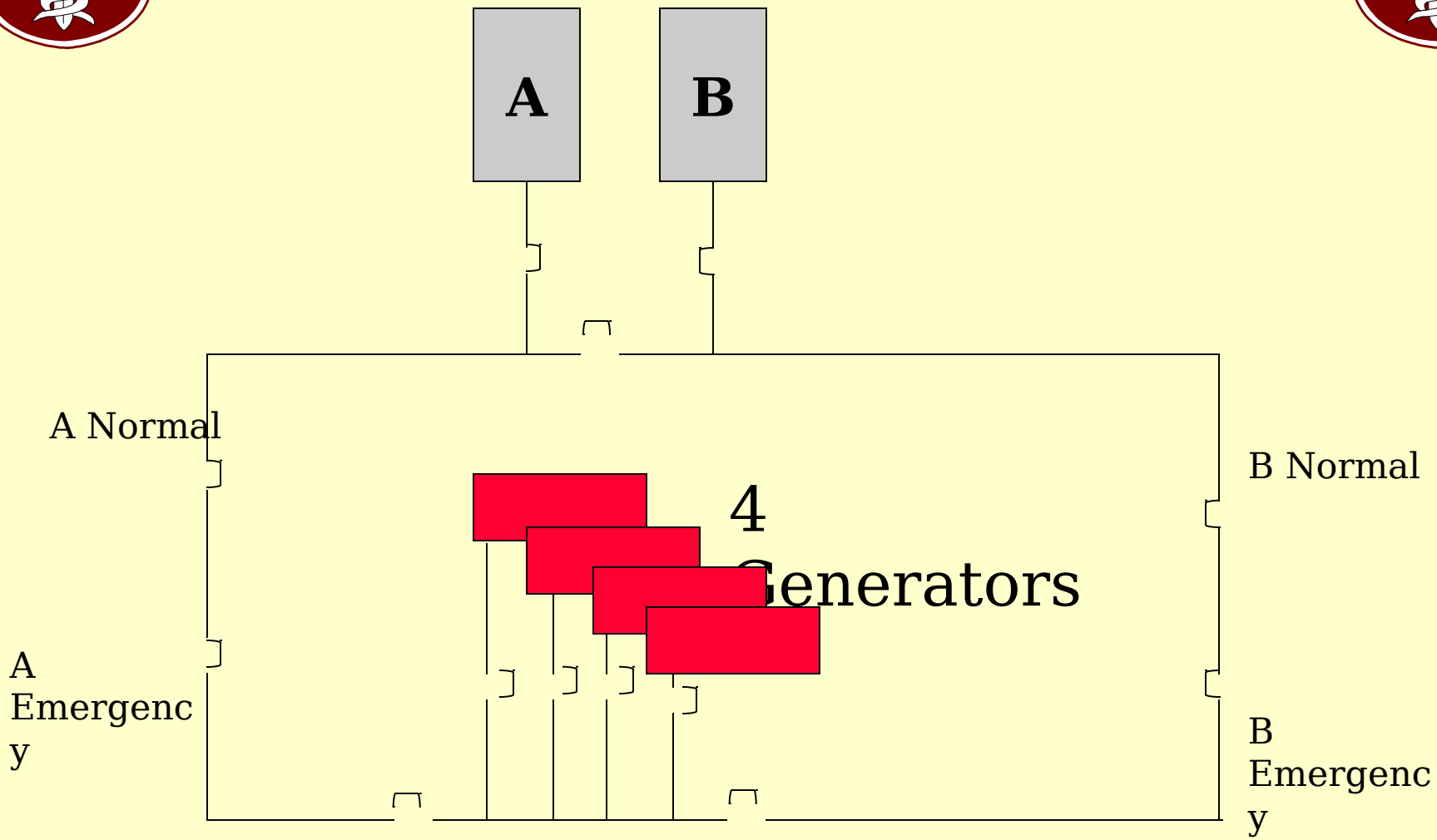
- NEC NFPA 70 – installations
- NFPA 99 – testing maintenance
- Facility must maintain a reliable system to supply electricity during interruption of normal services

Electrical Power



- BAMC is fed from a substation on FSH.
- Has one overhead circuit and one lateral circuit.
- In the event one circuit fails, the other will pick up the load.
- If both circuits fail, the generators start and the EES circuits are connected.

System



DANGER
HIGH VOLTAGE
DANGER
HIGH VOLTAGE

Essential Electrical System

- Two systems
  - Emergency system
  - Equipment system
- Emergency system
  - Limited to circuits essential to life safety and critical patient care
    - Life safety branch and critical branch
- Equipment system shall supply major electrical equipment necessary for patient care and basic type I operations

B

EES

- Life safety branch
  - Exit lights, corridor lights, comm and alarm
  - Intended to announce emergencies and provide sufficient light and directions for exiting
- Critical branch
  - Critical care areas that utilize anesthetizing gases, task illumination, selected receptacles and fixed equipment
  - Connected to maintain essential medical care in patient care areas
- Restoration of power - with in 10 seconds

Equipment System

- Connected so that equipment is automatically restored to operation at appropriate time lag intervals following the energizing of the emergency system
  - Central suction systems serving medical and surgical functions
  - Sump pumps and other equipment required to operate for the safety of major apparatus, including associated control systems and alarms
  - ESCS and stair pressurization systems
  - Kitchen hood supply and/or exhaust systems, if required to operate during a fire in or under the hood
- Delayed automatic or manual connection
  - HVAC for delivery, labor, recovery, ICU, CCU, nurseries, infection/isolation rooms, emergency treatment spaces and general patient rooms

Wiring Requirements

- Life safety branch and critical branch of the EES shall be kept entirely independent of all other wiring and equipment
- Receptacles – EES
  - Distinct color
  - 4 general care
  - 6 ICUs
  - Annual testing

Emergency Power System

Maintained, tested and inspected

- Testing all battery-powered lights for egress;
  - 30 day intervals for minimum of 30 seconds and
  - annual test for a duration of 1 hour
- Testing Stored Emergency Power Supply Systems (SEPSS)
  - Quarterly functional test for 5 minutes
  - Annual test at full load for 50% of the full duration of its class
- Testing each generator 12 times a year <20 days or > 40 days
  - 30 continuous minutes under a dynamic load
  - At least 30% of nameplate rating of the generator
- Testing all automatic transfer switches
  - 12 times a year not less than 20 days and not more than 40 days
- If you can not meet standard then you have some options.

Vertical/Horizontal Transport

- Elevators
  - Patients transport
  - Supplies
  - Food
  - Trash/waste
- Pneumatic tube system
  - Spills
- Inspection, testing and maintenance

Boiler/Steam Systems

- Maintenance
- Inspections
- Shutdown
- Cleaning
- NFPA 85

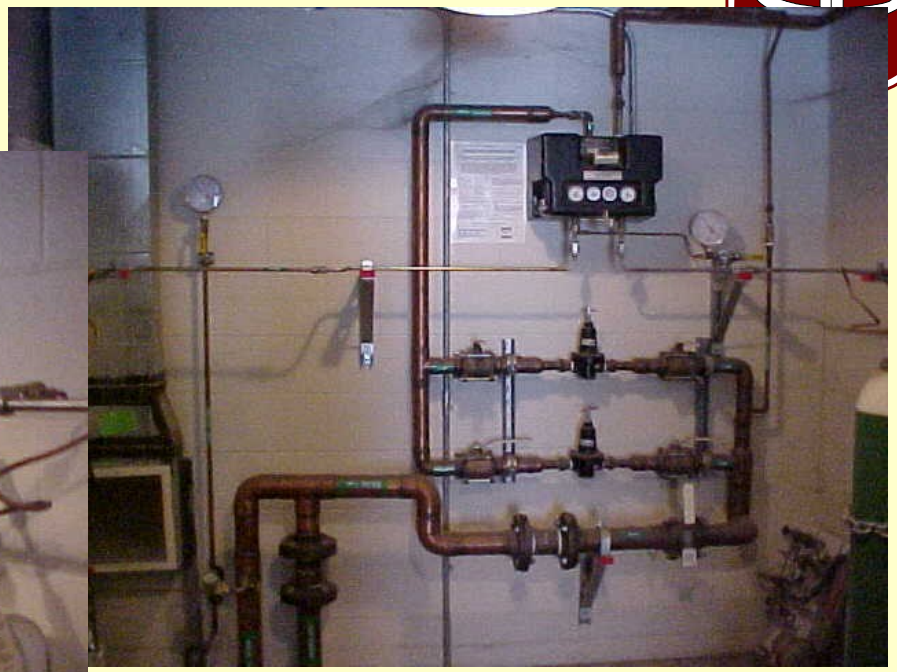
Medical Gas System

- Provide oxygen, nitrous oxide and compressed air throughout the MTF
  - Major concern -
    - right gas connected to right system line
    - Purity
    - Line pressure
- Effective maintenance program
  - PM and inspections
  - Effectiveness and safety of the system
  - Testing for proper configuration
  - Training and education
  - Labeling shutoff controls
- NFPA 99
- Bulk medical gas systems
  - NFPA 50
  - Back up systems

ISK

Bulk Nitrous Oxide

Bulk Oxygen Room



Medical/Surgical Vacuum

- Most MTFs have vacuum systems
  - Med/Surg used for aspiration treatment and/or surgical procedures
  - WAGE
- Labs should have a separate system to prevent contamination or damage to system used for patients
- PM program
- Identified and emergency shutoff controls labeled throughout each system

Communications Systems

- Key in healthcare
  - Coded messages for staff
    - Code red – fire
    - Code blue – Cardiac arrest
    - Code pink – infant abduction
- Paging system, nurse call system
- NFPA 101 for high rise
- NFPA 99 for emergency communications

HAC System Operations

NFPA 90A

- General
  - Procedures for partial or complete shutdown
  - Current inventory of all component
  - PM
  - Training for user operators
  - Special training for maintainers
- Designed and functioning system
  - ASHRAE std 55-MILHB 1191 guidance for temperature and humidity
  - ASHRAE 62 – outdoor and recalculated air needs
  - Isolation rooms (TB), positive pressure rooms, negative pressure rooms
- Maintenance
  - Inventory, PM
- Smoke free

Indoor Air Quality

- Factors affecting IAQ
  - Chemicals
  - Air not balanced
  - HVAC not able to maintain occupant comfort
- Factors contributing to Good IAQ
  - Proper ventilation
  - Temperature, humidity and air movement
  - PM
  - Isolation of emission sources from occupied spaces
  - Major contamination in HCF
    - Antineoplastics
    - Formaldehyde
    - Glutaraldehyde
    - pentamidine

IAQ Complaints

- Headache
- Sneezing
- Fatigue
- Eye, nose, and throat irritation
- Shortness of breath
- Skin irritation
- Sinus congestion
- Dizziness
- Cough
- Nausea

Hospital Concerns IAQ

- Chemical contaminates
  - Ethylene oxide
  - Glutaraldehyde
  - Formaldehyde
- Microbiological contamination
  - Legionnaires bacilli
- Preventing IAQ concerns
  - PM
  - Analyze Ventilation system
  - HVAC system Inspections
  - Effective Filtration systems
  - HEPA

Building-Related Illnesses

- Specific medical conditions which can be determined by physical signs and laboratory findings
- Includes any medical condition that prompts eval of HVAC system
  - Respiratory allergies
  - Nosocomial infections
  - Asthma
  - Humidifier fever
  - Legionnaires
- Designate a POC
- Have description of building systems
- Know bldg function, activity, and systems
- Document air contaminants problems
- Establish a PM program
- Checklist to use for hazard surveillance
- Follow up

Investigating IAQ Complaints

- Potential safety hazards
- Microbiological
- Chemical
- Asbestos
- HVAC systems
- Pollutant Pathways

Ventilation

- Mechanical Ventilation
- Engineering Standards
- Engineering Controls
- Fume Hoods and Ventilation
- Definitions

ASHRAE Standards

- Standard 62: Ventilation for Acceptable Air Quality
- Standard 53: Thermal Environmental conditions for Human Occupancy
- Standard 52: Method of Testing Air-cleaning Devices in General Ventilation for Removing Particulate Matter
- Guideline 1: Guideline for the Commissioning of HVAC Systems
- Standard 52-76 Methods of Testing Air Cleaning Devices Used in General Ventilation for Removing Particulate Matter

Refrigerant Recycling

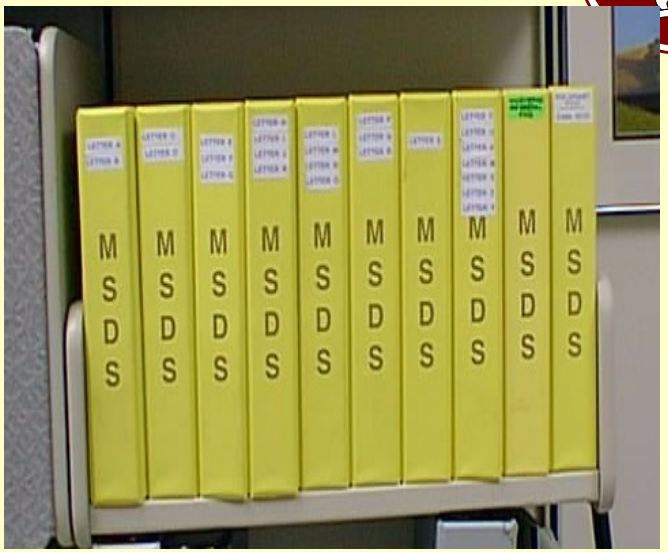
- Clean Air Act
  - Ozone-depleting refrigerants
  - established leak repair requirements for equipment holding 50 pounds or more of refrigerant
  - Ozone-depleting compounds in appliances must be removed before appliance is disposed of
  - Purity standards updated
  - certification requirement for recycling and recovery equipment
  - maintenance personnel must have at least one piece of certified, self-contained recovery equipment on the premises

Pg 206

Hazardous Material

- Characteristics
  - Corrosivity
  - Ignitability
  - Reactivity
  - Toxicity
- Hazardous Materials
  - Effects
  - Identify Hazardous substances
    - quantity used
    - quantity on hand and where stored
    - MSDS currency
    - Availability of less hazardous - substitute

Yellow Binders

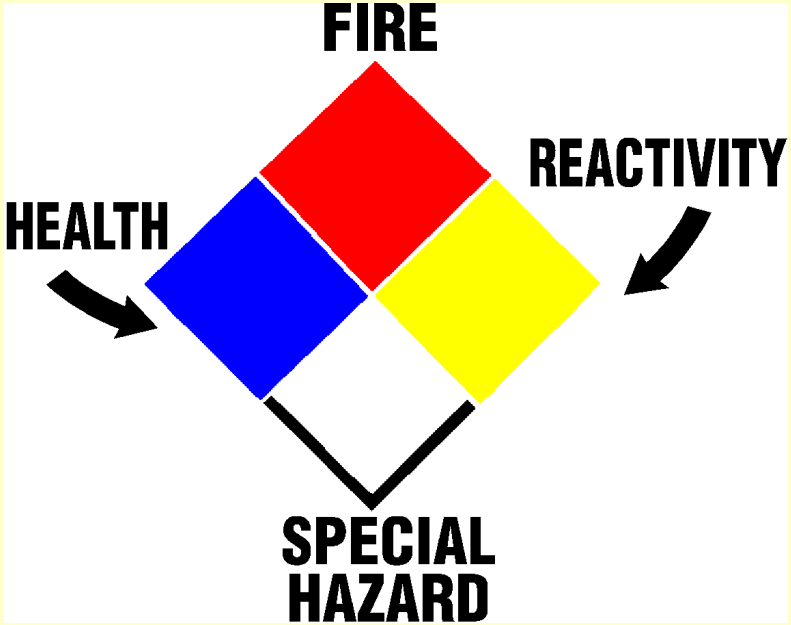


- all times

accessible to staff members at

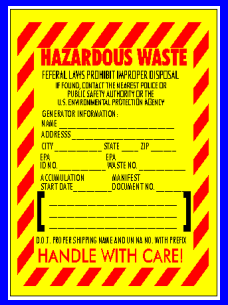
Labels

CHEMICAL NAME
HEALTH
FLAMMABILITY
REACTIVITY
PROTECTIVE EQUIPMENT
HAZARD RATING
4 EXTREME
3 SERIOUS
2 MODERATE
1 SLIGHT
0 MINIMAL


FIRE
REACTIVITY
HEALTH
SPECIAL HAZARD

EPA

- Hazardous Waste
- Regulated Medical Wastes
- 40 CFR §260's


HAZARDOUS WASTE
FEDERAL LAWS PROHIBIT IMPROPER DISPOSAL
IF FOUND, CONTACT THE NEAREST POLICE OR
PUBLIC SAFETY AUTHORITY OR THE
U.S. ENVIRONMENTAL PROTECTION AGENCY
GENERATOR INFORMATION:
NAME
ADDRESS
CITY STATE ZIP
EPA ID NO. EPA WASTE NO.
ACCUMULATION START DATE MANIFEST DOCUMENT NO.
D.O.T. PROPER SHIPPING NAME AND UN NA NO. WITH PROPER
HANDLE WITH CARE!

OSHA HAZMAT Regs

- Asbestos 1910.1001
- Benzene 1910.1028
- Bloodborne Pathogens 1910.1030
- Ethylene Oxide 1910.1047
- Formaldehyde 1910.1048

Exposure to HC HAZMAT Hazards

- Disinfecting
  - Isopropyl alcohol
  - Ethyl alcohol
  - Ammonia
  - Sodium Hypochlorite
  - Iodine
  - Phenol-based disinfectants
- Glutaraldehyde
- Formaldehyde
- Formalin
  - 37% and 10 %

Chemotherapeutic

- Antineoplastic Drugs
  - Exposure
    - inhalation and dermal absorption
    - aerosols - inserting/withdrawing
    - Skin absorption - contact with patient urine
  - Employee evaluations - placement/periodic exam
    - emphasize the hematopoietic, reproductive and nervous systems
  - Safe handling
    - Use BSC in preparation
    - Proper disposal
    - labeled
    - disposed as biohazardous materials
  - Spill procedures
    - avoid contact, wash, flush eyes, report exposures, Baseline CBC and 6 months follow-up

Reproductive Hazards

- WAG, solvents, ETO, ionizing radiation and chemotherapeutic agents
  - Quarterly WAG monitoring
  - Hazard surveillance/risk assessment
  - Potentially harmful on reproductive health
  - Counseled
    - prior to planned pregnancy
    - stress reproductive health
  - Pregnant workers
    - policy for leave or move out of harms way

p231

Solvents

- Found in chemicals used in medical labs
- Cleaning agents in housekeeping and maintenance and some in inks and cleaning agents in print shops
  - Exposure hazards
    - CNS depressant-headaches, dizziness, weakness, nausea
    - Irritate - eyes, skin and upper respiratory tract
    - Prolonged contact - defatting and dehydration of the skin
  - Protection
    - Local exhaust ventilation
    - gloves, respirators, rubber aprons, goggles, boots may be required during certain procedures or spill cleanup
    - trained to recognize symptoms of exposure
    - work only under exhaust hoods when handling
  - Solvent hazard severity
    - type and how used
    - length and type of exposure, ventilation, evaporation rate and concentration of vapors, housekeeping/safety practices and engineering controls and PPE

HAZMAT cont

  - Acetone
  - Benzene
  - Perchloroethylene
  - Xylene
- Other hazardous substances in HC
  - Methyl Methacrylate
    - Used in OR and dental- cement prostheses to bone
  - Peracetic Acid - used to sterilize med instruments, may be found in labs, CMS, and wards
  - Mercury - sphygmomanometers, thermometers, also used in dental amalgams, found in paint, fluorescent light bulbs and batteries
  - Lead

HAZMAT cont

- Oxides
  - Ethylene Oxide
    - sterilize medical instruments especially those made of heat-labile materials
    - TWA 1ppm OSHA PEL 8 hr TWA of 1 ppm excursion limit of 5 ppm
    - STEL 5 ppm action level is .5 ppm
    - exposure is primary through inhalation
    - odor threshold about 700 ppm
    - NIOSH ceiling 5ppm for no more than 10 minutes TWA 0.1ppm
  - Nitrous Oxide - sedative and painkiller
    - NIOSH - exposure levels be kept under 25 ppm - halogenated agents exposure level of 2ppm
    - Check for leaks
    - use scavenging system - WAGE
    - proper mask size for patient
    - proper exhaust
    - WAG monitoring

Misc Materials

- Chemicals from housekeeping
- Gasoline
- Pesticides
- Compressed Gases - NFPA 99, CGA handbook

Waste Management

- All HCF generate solid and hazardous waste as defined by RCRA
  - 10 lbs per patient each day
  - RMW
  - Hazardous waste
    - cradle to grave
  - RCRA
    - goals
    - solid waste
    - RCRA and solid waste

Hazardous Waste Regulations

- HCF related
  - Lab
  - RMW
  - RAD - mixed waste
  - Gases
  - Antineoplastic waste

Medical Waste

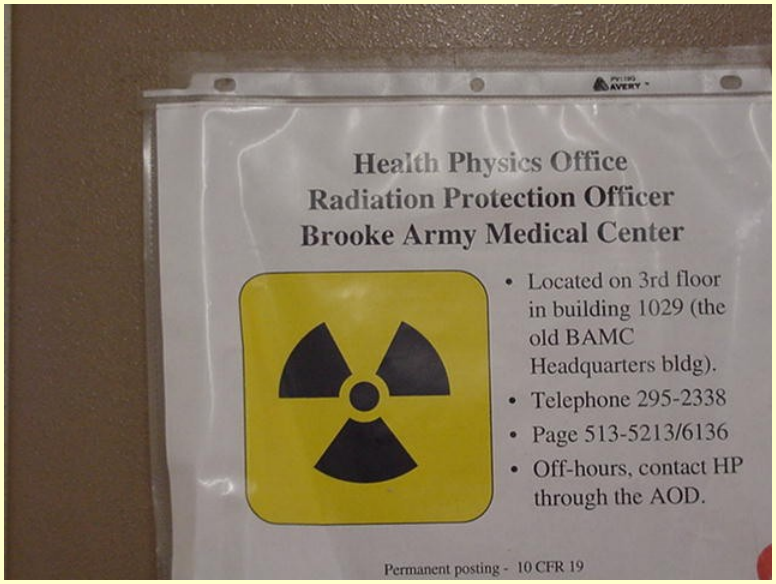
- RMW - diagnosis, treatment, or immunization of human beings or animals, in related research, biological production or testing.
- RMW
  - classes
  - MW generators - hospitals, labs etc…
  - Animal wastes
  - Blood and body fluids
  - Microbiological wastes
  - Pathological wastes
  - Sharps
  - Surgical wastes

Waste Disposal

- Container disposal
  - have procedures
  - may need to be cleaned
- Separating Waste materials
  - watch for reactions with non-compatible
- Hazardous waste labels
  - know what's there
- Unlabeled containers
  - never open an unlabeled container

LINEN
SOILED TRASH
BIO-HAZARD

INFECTIOUS WASTE
DANGER


Health Physics Office
Radiation Protection Officer
Brooke Army Medical Center
• Located on 3rd floor in building 1029 (the old BAMC Headquarters bldg).
• Telephone 295-2338
• Page 513-5213/6136
• Off-hours, contact HP through the AOD.
Permanent posting - 10 CFR 19

TX AB W/H 3.1 CF
SW31
CHEMO / PATH
INCINERATE ONLY
DATE WASTE PACKAGED
DATE WASTE SHIPPED
DATE CONTAINER PLACED
IN STORAGE

Handling Procedures

- Packing requirements
  - container clearly labeled - outermost packaging
    - infectious waste, medical waste, biohazardous
    - red bag
    - biohazard symbol
    - impermeable to moisture and strong enough to resist ripping, tearing, or bursting under normal conditions
    - sharps in rigid, leak-proof, puncture-resistant
    - small container put in larger containers
  - identification on outer packing
    - generators name and address
    - date packed
    - biohazard symbol/warning: medical waste, infectious waste or Biohazardous

- Waste containers
- Storage of untreated waste
- Transpiration of untreated waste
- Separating waste
- solid and semi-solid waste

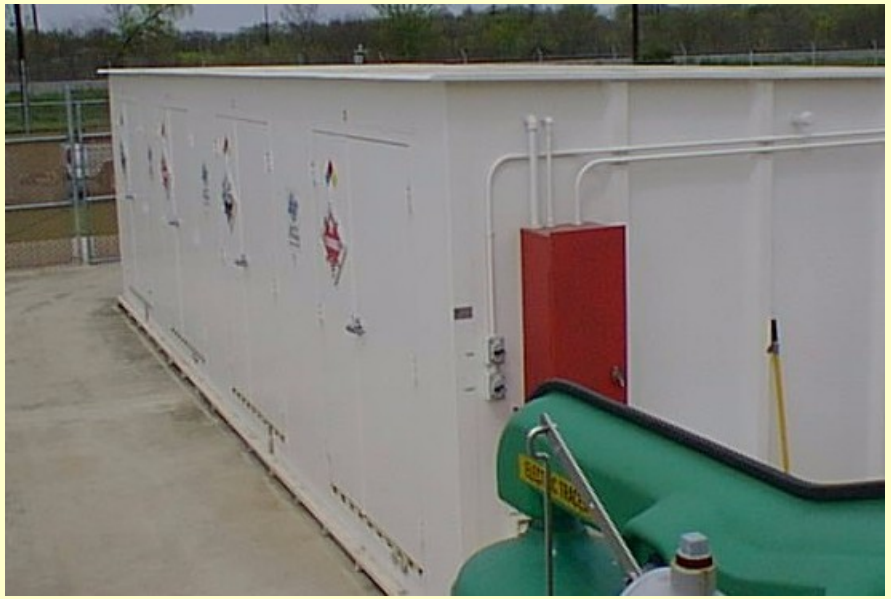
Medical Waste Disposal Methods

- Autoclaving
  - precautions
- Incineration
- Thermal inactivation
- Gas/vapor sterilization
- Chemical disaffection
- Irradiation (microwave)
- On-site disposal
- Off-site disposal
- Final disposal

Spill Clean-up and Disposal

Kit

Disposal



Med Waste Program Management

- Components
- Evaluating MW Mgt programs
- Contingency planning
- Recording keeping

Hazardous Waste Training

- Worker Training
  - General
  - HAZMAT tech
  - Scope of training
  - Other topics
    - emergency response
  - Frequency
  - Documentation
  - Infectious waste disposal training
- DOT hazardous materials markings
  - marked, labeled or placarded according to DOT regs
  - non-bulk packages must retain their labels or marked appropriately

Biological Hazard Control

- CDC Guidelines
  - Guidelines for Prevention and Control of Nosocomial Infections
  - Based on scientific studies
  - IC practices that are applicable in one setting may not necessarily be applicable or practical in another
  - Reduction of risk of nosocomial infection depends largely on the performance of correct patient care and handling practices
  - Personnel more likely to follow effective practices if given proper training followed by periodic in-service education
  - Continuous evaluation of care practices under the supervision of IC staff will assure continued adherence to correct practice

WASH HANDS

CDC IC Guidelines
new guidelines

- Design
  - Epidemiologically sound
  - Importance of body fluids, secretions…
  - Adequate precautions for infections transmitted by airborne, droplet and contact routes of transmission
  - Keep simple to avoid confusion with existing IC programs
- Major Changes from previous CDC recommendations
  - Standard precautions
  - Three sets of precautions based on route of transmission
  - ID highly suspicious patients for infection
- Standard Precautions
  - Standard precautions as opposed to universal precautions
  - Designed for all patients regardless of presumed infectious status

CDC Guidelines cont

- Transmission Precautions
  - Table 1of CDC guidelines give precautions
  - Table 2 provides information on clinical syndromes and empiric precautions
  - Use when caring for patients known/suspected to be infected or colonized with pathogens that can be transmitted by airborne, droplet or skin contact contaminated surfaces
  - Used in addition to standard precautions and included airborne, droplet and contact precautions
- Recommendations – each tier has guidelines for
  - Hand washing and glove use
  - Patient placement procedures
  - Transporting infected patients
  - Masks – PPE
  - Patient care equipment and articles
  - Linen and laundry procedures
  - Dishes, glasses, cups, and eating utensils

Healthcare Disinfecting

- Disinfectants
  - Phenols
  - Iodine
  - Iodophors
  - Bleach
- Quaternary Ammonia Compounds-safest and most widely used
  - No odor
  - More effective than phenol
  - Non-corrosive on most surfaces-non staining
  - Kills all types of bacteria
  - Safely stored for months

Disinfection Terms

- Germicide – kills germs
- Antiseptic – destroys germs in living tissue
- Bactericide – kills bacteria
- Bacteriostat – inhibits the growth of bacteria
- Disinfectant – kills bacteria that cause infections
- Sterilization – renders a surface completely free of all bacteria
- Sanitizing – reduces bacteria on a surface to an acceptable level

- **Bacteria** - fungus family, do not make their own food, live in presence of other plant and animal life. A million can be placed on the head of a pin. Grown when they find food and conditions are favorable. Human body is good host. Cough or sneeze releases millions of bacteria. ID by shape and size
  - Staphylococcus aureus – cocci – bioils and food poisoning
  - Bacilli – rod shaped organisms – typhoid fever, TB, Spores
  - Sprillae – bacteria – syphilis, cholera
  - Gram-negative bacteria – refers to chemical difference in certain bacteria
- **Virus** – chemical compound of the protein variety; can grow, and appear to have the ability to reproduce; easily destroyed by disinfectants

Infection Control Procedures

- Written IC program
  - Sound personnel hygiene
  - Stress care for work-related illnesses, eliminate unnecessary procedures
  - IC program elements
    - Placement evaluations
    - Health and safety education
    - Immunization programs
      - Annual ppd, flu
    - Surveillance
    - Exposures & infection risks
    - Work restrictions
    - Maintenance of health records

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- IC in long-term facilities
- Environmental controls
  - TB
  - Construction projects
  - Eating location, storage of lunch
  - Scratches, cuts
- IC and safety
  - Work together
  - IC and safety committee may be combined in small MTFs
  - IC measures in everything done in healthcare
- IC committee

Isolation and IC Principles

- Hand washing
- Transmission Routes
  - Contact transmission
  - Indirect contact transmission
  - Droplet transmission
  - Common vehicle transmission
  - Airborne transmission
  - Vectorborne transmission
- Immunizations
  - Rubella
  - Hepatitis B
  - Measles
  - Influenza

Types of Isolation

- Contact Isolation – masks normally used
- Secretion Precautions – staph & strep, skin infections, masks not required, gloves and gowns must be used if contact is likely
- Strict Isolation – protection against serious infections
- Respiratory Isolation – airborne, pneumonia
- Acid-Fast Bacillus Isolation (TB) N95 mask; gloves for contact with blood or body fluids
- Enteric Isolation – feces contact

Sharps

- Hazards of needles and sharps
  - Needlesticks
  - Sharps safety
  - Sharps or needlestick exposure incidents
  - Sharps handling

Bloodborne Pathogens

- Risk for HIV, hepatitis B and C and other infectious diseases
- OSHA – protect workers against hazards due to exposure to blood, certain body fluids, include BBP
- Public law
- BBP standard 29CFR 1910.1030 – protects workers
  - Blood
  - OPIM – body fluids, saliva, semen, vaginal secretions, cerebrospinal etc…
  - Unfixed human tissue & organs, HIV containing cells or tissue cultures, & HIV/Hepatitis B virus culture media or other solutions
  - Exposure – reasonably anticipated
  - OSHA authority
  - Labeling

Exposure Control Plan

- Job classification, protective measures, vaccination & post exposure follow-up, employee right to know, PPE, housekeeping procedures, record keeping, procedures for evaluating exposure incident
  - Occupational exposure
  - Training requirements

BBP cont

- Hepatitis
  - Hepatitis A
    - Immunoglobulin
    - Accounts for almost 50% of reported cases in the US
  - Hepatitis B – HBV
    - Most common
    - Most infected individuals display no symptoms
    - Most recover 10% become carriers
    - More easily transmitted than HIV
    - Some at higher risk
    - High-risk occupations
      - Physicians
      - Dentists
      - Nurses
      - Law enforcement and fire fighters

  - Can cause either acute or chronic outcomes
  - Healthy adult produces an antibody
  - Some cannot clear virus and become chronic carriers
  - Acute infections 1/3 show no symptoms, 1/3 have mile flu like illness and 1/3 more severe responses including jaundice, dark urine, fatigue, anorexia, nausea, abdominal pain, joint pain, rash and fever
  - 1 to 2% death may occur
- Chronic HBV
- Hepatitis B vaccination requirements
- Hepatitis B vaccine information
- Dosage
- Hepatitis C, D and E

- Human Immunodeficiency Virus (HIV)
- Tuberculosis
  - Occurs by inhalation
  - Can remain in body in a dormant state for years
  - No visible signs of latent TB
    - 10% at risk for developing the disease later in life
  - General duty clause to enforce
- OSHA TB guidelines
  - CDC guidelines
- Citation (NOV)
  - Exposure or potential exposure
  - Procedures performed on individual with suspected or confirmed TB

- Abatement Methods
  - ID persons with active TB
  - Med surveillance, skin tests, exams (not cost)
  - Manage positive skin tests
  - Isolation
    - Negative pressure
    - HEPA or
    - Outside exhaust
  - Employee information and training programs

- TB Respiratory Protection Policy
  - CDC guidelines
  - N95 mask – minimum acceptable
  - Quantitatively or qualitatively fit tested
  - Three available sizes
  - Ability to be checked by worker each time respirator is donned
  - Must be provided (suspected or confirmed)
    - When entering rooms TB patient
    - High-hazard procedures on TB patient
    - EMS
  - Program that meets 29CFR1910.134 requirements

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TB control for healthcare settings

- Population served
- Risk assessment
- PPD test results of employees
- Categories of risk assigned
- HCF implement appropriate TB infections control program
- Risk classification based on profile of TB in the community

Negative Pressure

Positive Pressure

•Guidelines Highlights

  - High risk settings
  - Isolation room requirements
  - Written protocols
  - Patient status
  - Performance criteria
  - Testing
- Worker training and education
- Engineering controls

Infectious Waste Management

- 40CFR 259.10
  - Medical/infectious waste – solid waste
    - Generated in diagnosis, treatment or immunizations of human beings or animals
    - Research, biological production or testing
  - Handling Guidelines
    - Segregated from other waste
    - Packaged to protect handlers and public
    - Sharps packed in rigid, leak-proof, puncture resistant containers
    - Conspicuously labeled
    - Stored to inhibit microbial growth and exposure potential
  - Containing spills

Patient Area Safety

- Equipment Safety
- Electrical Safety
  - Pads
  - Heating appliances
  - Patient electrical appliances approval
    - Checks before use – general care, ICU, Burn unit
  - Electric beds
  - No ungrounded items in patient care areas
  - Oxygen enriched environment restrictions
  - Extension cords
  - No multiple outlet strips in patient care areas

Patient Areas cont

- Electric heating pad hazards
- Bed safety
  - Height
  - Headboard
  - Mattresses
  - Wheels
  - Bed side rails
  - Slippery floors near bed
  - Bed alarms

Volunteer Safety

- Training
  - General safety
  - Fire safety
- HAZMAT
  - Patient care areas
  - RAD
  - Hazard ID

OR Safety

- Fires in the OR
  - Oxygen-enriched area/environment (OEA)
    - NFPA 99 concentrations >23.5 OEA
  - Heat sources
    - electric equipment
    - Electrosurgical Units - equipment (ESU)
    - flammable gases
    - percussion sparks
    - heated probes, drills and burs, argon beam coagulators
    - lasers

OR Fires cont

- Fuel
  - OEA
    - Almost anything that comes in contact with patient
    - Patients themselves
    - Gloves
    - Endotracheal tubes (ETTs)
    - Alcohol, acetone
    - ointments

Preventing OR Fires

- Staff training
- Controlling heat sources
- Managing fuels
- Minimizing Oxygen concentration
- Prepare for Fires
  - Fire plan
  - Drill
  - Fire/smoke zones in OR suites

Prepare for Fires

- Fire plan
- Drill
- Fire/smoke zones in OR suites
- RACE
- Fire Extinguishers
  - use on patient - pros and cons

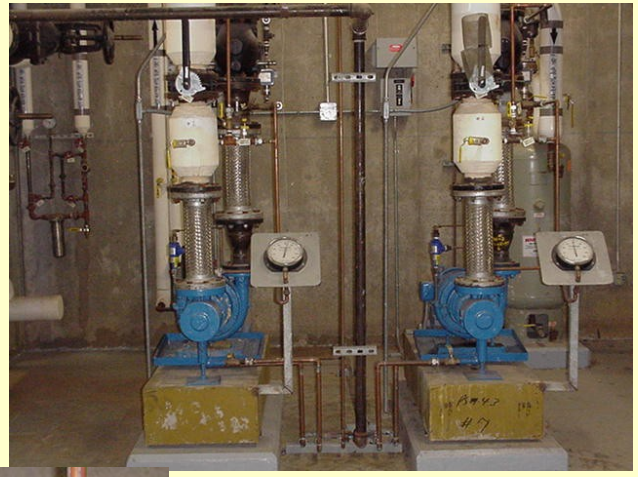
General Safety

- WAG
  - Quarterly monitoring
  - Scavenging
  - WAGE
- Electrical safety
  - Equipment
  - Extension cords
  - Hospital grade
  - UPS/battery bank
- No flammable anesthetics in our MTFs

WAG

Operating Suites

QUINCY



YORK
Air-Modulator
Controls

Special Care Units and Dialysis

- Fire
  - DIP
- Electrical safety
- Semiannual inspections
- Clear means of egress
- Dialysis machines

CMS

- Sterile environment
- Autoclaves
  - ETO
  - Steam
- Adequate ventilation
- Sharps
- Handle all returned items as contaminated
- Material handling
  - stepstools, ladders
- Gas systems

Pharmaceutical Safety

- Drug control
- FDA
- Packing and protection
- Unit dose dispensing systems
  - PIXIS
  - Medication errors
    - right drug right patient
  - Cytotoxic drugs
  - Research/experimental drugs

Pharmacy Hazards

- Slips, trips, falls, cuts, chemical exposure
- Back injuries
- Hazard control measures
  - Use stepladder when required
  - Clean up spills
  - Proper disposal
  - Properly guard equipment
  - Adequate ventilation
    - hoods - laminar flow
- Antineoplastic agents
- Walk in vaults - egress
- Break areas away from pharmacy prep areas

Pharmacy Safety

- ASHP recommend SMP
  - Member SOHC
  - Education and training
- HAZMAT
- ASHP - hazardous drugs
  - Cause DNA damage or mutations
  - Carcinogenic or teratogenic
  - Affect human organs
  - Handled in BSC, class II
- Handle RAD MAT IAW NRC

HAZCOM Program

- ID HAZMAT where used and stored
- Written HAZCOM program
- Drug Storage
- Disaster Preparedness
  - EPP
  - Obtaining and distributing drugs during emergencies
- Fire Safety

Healthcare Support Areas

- Environmental Services
  - Mopping, dusting and disinfecting
  - Patient areas and rooms
  - Maintaining common areas, corridors and offices
  - Windows, carpets and vents
  - Terminal cleaning of patient room after discharge
  - Trash, and RMW
  - Disinfecting contaminated areas
  - Spill cleanup -
    - BBP
    - Chemical

Cleaning for Health

- Sanitary - general health protected
- Disinfected - 95%
- Sterile - 100% free of contamination
- General cleaning
  - problems
  - stripping and waxing
  - corridors in patient areas

Environmental Services cont

- Guidelines for cleaning
  - Consideration for patients, visitors and staff
  - Contamination removal is a priority
  - Protect personnel from exposure
  - Organizational wide assessment
  - Disposal of waste properly

Cleaning Effectiveness

- Impacts the quality of patient care
  - Env workers exposed to all HC hazards
  - Protected under OSHA
  - Prone to
    - strain-related injuries,
    - trips, slips and falls
  - On-going training
    - HC hazards - RAD, gases, BBP, HAZMAT, JCAHO, proper storage
  - Env supervisor is the key
  - Env services integrated into everyday operations

Environmental Services cont

- Accident prevention
- Chemical and Physical Hazards
- PPE
- Electrical safety
- Window cleaning
- Maintaining equipment
- Equipment carts
  - never unattended
- Trash & bio hazard containers
  - trash rooms > 32 gal w/i 64 sq foot area
  - carts covered and never unattended
    - placed in protected room when and if unattended

Trash

Laundry Safety

- General consideration
  - Personnel trained in handling contaminated items
  - Sharps hazards
  - Chemical and biological hazards
- Linen Handling
  - placed in plastic bags
  - Colored coded
  - Isolation linen - doubled bagged and washed separately
  - Good IC procedures
- Most MTF contract out

Food Service

- Food service operations
- Nutrition and Dietary Management
- Contract food service
  - AAFES
  - Other - blind vendor
- Hazards
  - Burns
  - Fire
  - Electrical
  - Trips, slips and falls
  - Cutting
  - Chemical and Physical
- Equipment

Food Service cont

- Area layout
- Controlling food contamination
- Foodborne illness
- Cross contamination
- EPP
- Training and orientation
- JCAHO will look at food service activities

Security

- Workplace violence
  - OSHA guidelines
    - written program
    - risk assessment
    - 3 Es
    - training and education
    - record keeping
      - OSHA log
      - Medical reports
      - Reports of aggressive behavior that does not result in injury
      - History of violence

OSHA Workplace Violence cont.

- Program evaluation
- Management commitment
- Implementation

– Prevention tips

– Signs of violent behaviors
  - Primary stage
    - refusal to cooperate with others
  - Intermediate stage
    - Arguments with others, refusal to follow policies, rules, damage or theft of property & threatening comments
  - Advanced Stage
    - Frequent intense anger

– Handling tense situations
  - Stay calm, keep distance, firm quiet tone, do not become emotional or moves that threaten

Health Care Radiation Safety

- NRC
  - Licenses
  - Special licenses
  - Written program
  - RPO
  - RCC
  - Disposal
- Low-level sources and waste
- Protection of patient, visitors and staff
- Terms

Radiation Sources

- Ionizing
  - Diagnostic radiology
  - X-rays
  - fluoroscopy
  - angiography
  - dental
  - CT
  - nuclear medicine
  - Radiation oncology

- FCA
  - Regulate the manufacture & distribution of radiopharmaceuticals & medical devices that contain RAD material
  - Set performance standards for x-rays
- Non-ionizing radiation
  - Infrared (IR) radiation
    - hazards - burns, increased pigmentation and enhanced dilation of capillary beds
  - Microwave/radiofrequency (FR) radiation
    - microwave ovens
  - Standards and Recommendation
    - ANSI
    - FDA
  - OSHA 29CFR 1910.97
  - Exposure control

- Ultraviolet (UV) radiation
  - germicidal lamps
  - nursery incubators
- RCC
  - monitor
    - exposure
      - film badge - dosimetry
    - licenses
    - training and education
    - reviews grants
    - reports to the MTF safety committee

Waste Management

- NCRP issues recommendations for dealing with RAD wastes
- Storage/Disposal
  - On-site storage
  - Half life of radionuclide and biological hazard
  - Mixed waste

- Common medical radiation material
  - Thallium
  - Xenon
  - Iodine
- EPP
  - Spill procedures
  - Decon procedures

Laser Safety

- Hazard
  - Eye damage
  - Laser striking the skin can result in erythema, blistering and charring
- Classes
  - 1 - capable of producing damaging radiation
  - 2 - may be viewed under strict controls
  - 3 - controls to prevent direct viewing and eye damage
  - 4 - must be control to prevent eye and skin damage

- Regulations-Guidance-Standards
  - SMDA
  - ANSI Z-136-1-Guidelines for Laser Safety and Hazard Assessment when enforcing workplace laser hazards under its general duty clause
  - ACGIH
  - ANSI Z-136.3-Safe use of Lasers in HCF
  - NIOSH
- PPE
  - Eyewear
    - Correspond to the wavelength of the laser
    - Power of the laser always determines the optical density or protection level
    - Must consider exposure duration

Laboratory Safety

- CAP
- NFPA 99 and 45
- Several functions - pathology, cytology, chemistry, microbiology etc…
- Chemical and Fire hazards
- **Lab standard 29CFR1910.1450**
  - covers clinical
  - covers all chemicals that meet the definition of health hazard - 1910.1200
  - Physical hazards must be addressed in training
  - Compliance with PELs and written chemical hygiene plan
  - Special consideration -
    - particularly hazardous chemicals and selected carcinogens
    - to reproductive toxins and substances that have a high degree of acute toxicity

- Exposure monitoring
- SOP for lab work
- HAZCOM training
- Medical consultation and exams
- Hazard ID - MSDS and labeling
- Hood performance certification

- **Chemical Hygiene Plan**
  - Written plan
  - Specifics training
  - Establishes appropriate work practices
  - Details procedures regarding med exams and special precautions
  - Reviewed annually
  - Available to employees
  - Appointment of CHO

- Training
  - Initial assignment and prior to assignment involving new exposure
  - Facility Chemical Hygiene plan & Lab standard
  - PEL & REL standards
  - Signs and symptoms of chemicals
  - Inventory, MSDS location
  - Policy on safe handling, storage and disposal
  - Emergency procedures and PPE
  - 3 Es
  - Detection methods and observation guidelines to detect hazardous chemicals

- Medical Examination and consultation
- Control Methods and PPE
- Hazard identification
  - labels
  - MSDSs
- Recordkeeping
  - 29CFR1910.20
  - Medical records - Duration of employment plus 30 years
  - Exposure records & related data - 30 years
  - Employed less than one year Med records given to employee

Laboratory Safety

- Supervisor Responsibilities
- Worker responsibilities
- General
  - Wash hands
  - Adequate ventilation
    - Check hood draft regularly
  - Check for static electricity
  - Proper cylinder storage
  - Limited access areas
  - Signage
  - Never pour down drain
  - NFPA 45 stand alone labs - NFPA 99 In house labs

- Biohazards
  - Lab safety handbook
- Laboratory Animals
  - Guide for Care and Use of Laboratory Animals - National Research Council, ISBN: 0-309-05377-3
- Handling and Disposing of Microorganisms
- Lab Instruments and Containers
  - Glass Tubing, cork borers, glass apparatus, suction flasks, vacuum distillations, pipettes
- Laboratory IC
- Storage and Disposal of Laboratory Waste
  - Lab waste hazards
  - Combustible wastes
  - Non combustible wastes
  - Radioactive waste

- Controlling Chemical and Physical agents
  - Hazardous Materials List - inventory
  - worker exposure
- Chemical hazards
  - Identify chemicals
  - American Association of Anatomists Chemical Listing
- Carcinogens/mutagens/teratogens
  - Carcinogens
    - Benzidine
    - Carbon tetrachloride
    - Ethylene oxide
    - Benzene
    - Dioxane

- Reproductive Hazards
  - Xylene
  - benzene
  - ETO
  - toluene
- Spill cleanup
  - EPP
  - Decon
  - Clean up and disposal

Biosafety Levels

- Biosafety level I
  - Basic laboratory – standard practices
- Biosafety level II
  - Labeling, medical surveillance, proper use of needles and syringes and PPE (lab coats, gloves)
- Biosafety level III
  - Extends further to control access to the lab, employ special PPE, (scrub suits/coveralls and surgical masks) and requires all work with infectious agents be conducted in biological safety cabinets or other physical containment devices.
- Biosafety level IV
  - Most hazardous organisms, requires the highest degree of containment.
  - Entrance through a change room – street clothes changed for lab cloth
  - Exit after decon shower
  - Transfer of supplies and materials through a double-doored autoclave, fumigation chamber, or airlock
- Employees trained in safety for level of biosafety they have access to

CLASS II TYPE B1

Laboratory Safety Text

CRC Handbook of Laboratory Safety

4th Edition

A. Keith Furr

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Overview of Hospital Safety

- **JCAHO –**
  - Safety management plan, fire prevention plan and HAZMAT/Waste plan management of the environment of care – surveyed every three years
  - Qualification of safety manager; education and training
  - SOHC/EOCC held every other month, rpt on accidents/injuries, fire drills, training, HAZMAT, and hazard surveillance
- **Hazard surveillance**
  - Annual, semiannual, quarterly high interest and monthly spot
- **Fire Protection**
  - Training
  - Quarterly fire drill all personnel all shifts
  - Inspect all fire extinguishers – monthly – annual maintenance
- **ICES**
  - Bi-monthly SOHC/EOCC
  - Annual evaluation of the plan and annual report to the governing body

Certifications

- **Certified Healthcare Safety Professional (CH**
  - **Board of Certified Healthcare Safety. 11900 Parklawn Dr., Ste**
    Rockville, MD 20852
- **Healthcare Environmental Manager (HEM)**
  - **ECRI, Center for Healthcare Environment Management,**
    5200 Butler Pike, Plymouth Meeting, PA 19462-1298
    email: chem@ecri.org
- **Hospital Safety and Security Manager (HSS**
  - **ASHE of the American Hospital Assoc**
  - **840 North Lake Shore Dr, Chicago, IL 60611**

Questions?

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